Table C - Tolerances for Formed, Cast-in-Place Concrete Structures		
Departure from established alignment		1 inch on tangents 2 inches on curves
Departure from established profile grade		1 inch
Inside dimensions		0.005 times specified dimension
Variation from the plumb or the specified batter in the lines and surfaces of walls, piers and in arises	Exposed, in 10 feet Backfilled, in 10 feet	½ inch 1 inch
Variation in cross-sectional dimensions		Minus ¼ inch Plus ½ inch
Variation in surfaces (gradual)	Invert Soffits, Walls, Sideslopes	¼ inch in 10 feet ½ inch in 10 feet
Variation in surfaces (abrupt)		¼ inch

Table D - Tolerances for Reinforcing Steel Placement		
Variance from indicated position	Spacing between adjacent bars and the distance between layers of bars	one bar diameter nor more than one inch
Concrete cover measured perpendicular to steel in the direction of tolerance		¼ inch

Elements not meeting these requirements shall be removed and replaced as directed by the Engineer.

6.11 Surplus Excavated Material - Any stockpiling, grading or disposal of material outside of the project limits is not covered under the District's permits and is the sole responsibility of the Contractor. Regulatory permits that may be required include, but are not limited to, Federal Clean Water Act (Sections 401 and 404), California Fish and Game Code (Section 1602) and Federal/State Endangered Species Acts. All costs to obtain these Regulatory Permits shall be borne by the Contractor.

6.12 Sewer Line Inspection - Prior to the commencement of construction, the Contractor is required to video record all sewer mains (8" diameter and larger) within the project limits. Additionally, the Contractor shall video record the sewer mains after the backfilling of the storm drain has been completed. Copies of the videotapes shall be provided to the Engineer. All costs associated with this requirement shall be included in the contract price bid for Clearing and Miscellaneous Work. The Contractor is required to replace and/or repair at his own expense, any sewers damaged or misaligned as a result of his construction activities.

6.13 Pipe Order Notification - The Contractor shall submit to the District the invoice from the pipe company stating, (1) pipe order date, (2) pipe quantity, and (3) estimated date of pipe delivery within five (5) calendar days of the award of the contract.

6.14 Project Signs - Supplementing Section 8.07 of the General Provisions, the Contractor shall be required to provide two new project signs. The Contractor shall install and maintain the project signs at locations specified by the Engineer, with painting and lettering as shown in Appendix "B" of these Special Provisions. The signs shall be installed as directed by the Engineer within five (5) days after District issuance of the Notice to Proceed. Upon completion of construction, the signs shall be removed.

6.15 Liability Insurance - The Contractor's attention is directed to Section 8.02, Insurance Hold Harmless, of the General Provisions. The City of Riverside shall also be named as additional insureds with the liability insurance coverage required to be maintained by the Contractor.

6.16 1602 Permit Compliance - An operation of law letter was issued for this project by the California Department of Fish and Wildlife (CDFW) on May 27, 2015. A copy of the CDFW letter and notification including attachments will be provided to the Contractor. The Contractor shall comply with the following conditions (excerpted below), described in the letter:

1. A copy of the CDFW letter and the permit notification shall be kept onsite at all times.
2. Coordinate with District for District to conduct pre-construction surveys for nesting birds if project activities and/or vegetation removal occurs during the nesting season (January 1st to September 15th).

6.17 404 Permit Compliance - A Section 404 Permit was issued by the U.S. Army Corps of Engineers (Corps) for this project on August 6, 2015. A copy of the 404 Permit will be provided to the Contractor to keep on the construction site at all times. The Contractor shall comply with the following special condition set forth in this Permit:

> Pursuant to 36 C.F.R. Section 800.13, in the event of any discoveries during construction of either human remains, archaeological deposits, cultural resources, or any other type of historic property, the Contractor shall immediately suspend all work in the discovered area(s). Contractor shall not resume construction in the area surrounding the discovery until the District re-authorizes the project construction.

6.18 401 Certification Compliance - A Section 401 Water Quality Certification (WQC) was issued by the Santa Ana Regional Water Quality Control Board (RWQCB) on April 21, 2015. A copy of the WQC will be provided to the Contractor to keep on the construction site at all times. The Section 401 WQC requires the District to use Best Management Practices (BMPs) during construction to minimize discharges of sediment and other wastes to receiving waters. The Contractor shall comply with the following special conditions (excerpted below), set forth in this Permit:

1. The Contractor must comply with the requirements of the applicable Section 404 Permit (see Section 6.17 above).
2. A copy of the 401 Certification and any subsequent amendments must be maintained onsite for the duration of construction.

3. All materials generated from construction activities associated with this project shall be managed appropriately. This shall include identifying all potential pollution sources within the scope of work of this project, and incorporating all necessary pollution prevention BMPs as they relate to each potential pollution source identified. Additionally no materials may be stored within waters of the United States or waters of the State of California.
4. The Contractor shall utilize BMPs during project construction to minimize the controllable discharges of sediment and other wastes to drainage systems or other waters of the State and of the United States.
5. Substances resulting from project-related activities that could be harmful to aquatic life, including, but not limited to, petroleum lubricants and fuels, cured and uncured cements, epoxies, paints and other protective coating materials, Portland cement concrete or asphalt concrete, and washings and cuttings thereof shall not be discharged to soils or waters of the state. All waste concrete shall be removed.
6. Motorized equipment shall not be maintained or parked within or near any stream crossing, channel or lake margin in such a manner that petroleum products or other pollutants from the equipment may enter these areas under any flow conditions. Vehicles shall not be driven or equipment operated in waters of the state onsite, except as necessary to complete the proposed project. No equipment shall be operated in areas of flowing water.
7. Construction dewatering discharges, including temporary stream diversions necessary for project construction may be regulated under Regional Board Order No. R8-2009-0003, General Waste Discharge Requirements for Discharges to Surface Waters that pose an insignificant (De Minimus) Threat to Water Quality.

6.19 Cultural/Paleontological/Hazardous Materials Discovery Instruction – A District professional will conduct instruction on or prior to the first day of earthmoving activity for construction workers to be observant for potential occurrence of cultural and paleontological resources and hazardous materials during excavation. This instruction will include sensitivity for identification of Native American cultural resources, paleontological resources and hazardous materials. Shift foremen, excavation equipment operators, and other workers responsible for observing or conducting excavations shall attend this instruction.

If findings are uncovered during excavation activity, the Contractor's attention is directed to Section 6.20 Accidental Discovery.

6.20 Accidental Discovery - In the event that any hazardous materials, historical, archaeological, or paleontological resources are accidentally discovered within project limits, the Contractor shall immediately cease all construction or ground disturbance activity in the vicinity of the find and notify the Engineer. District will provide the appropriate professional to assess the significance of the discovery and, if necessary, develop appropriate management and treatment measures. **The Contractor shall not resume construction in the affected area without Engineer's approval.**

Per State Health and Safety Code 7050.5, if human remains are encountered during construction, no further disturbance shall occur until the Riverside County Coroner has made a

determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The Riverside County Coroner must be notified within 24 hours by the Engineer. If the County Coroner determines that the remains are not historic, but prehistoric, the Native American Heritage Commission (NAHC) must be contacted by the Engineer to determine the most likely descendent for this area. Once the most likely descendent is determined, treatment of the Native American human remains will proceed pursuant to Public Resources 5097.98. The NAHC may become involved with decisions concerning the disposition of the remains.

Should any of the above-mentioned discoveries result in delays to the Contractor's work schedule, the Contractor shall be entitled only to an equivalent extension of time for the completion of the contract, and shall not be entitled to damages due to downtime and idle equipment or additional payments over and above the agreed upon contract prices.

6.21 Nesting Bird Pre-Construction Survey – The removal of potential nesting vegetation shall be conducted outside of the nesting season for birds to avoid impacts to active nests. The nesting season for common and special-status birds is January 1st through September 15th. If vegetation must be removed during the nesting season, a nesting bird survey of potentially suitable vegetation shall be conducted by the District within three (3) days prior to ground disturbance.

If no nesting birds are observed during the survey, site preparation and construction activities may begin. If an active bird nest is located, the nest site shall be restricted to a distance recommended by the monitoring biologist. Typically this is a minimum of 300 feet from the nest site in all directions (500 feet is typically recommended by CDFW for raptors) until there is no evidence of a second attempt of nesting. Construction shall not be permitted within the buffer areas while the nest continues to be active. The monitoring biologist will monitor the nest(s) during construction and document any findings. Once the monitoring biologist determines that the nest is no longer active then the buffer area would no longer be in effect.

Should nesting birds result in delays to the Contractor's work schedule, the Contractor shall be entitled only to an equivalent extension of time for the completion of the contract, and shall not be entitled to damages due to downtime and idle equipment or additional payments over and above the agreed upon contract prices.

6.22 Air Quality - Please see Section 27 - Dust Abatement of the Detailed Specifications.

SECTION 7 - SOILS REPORT

In conjunction with the soils investigation report prepared by Inland Foundation Engineering, Inc. dated March 23, 2012, the Contractor's attention is directed to Article 8.08 of the General Provisions. The logs of the soil borings for this report are included for the convenience of the bidders, in conformance with Section 8.08 of the General Provisions, as Appendix "C" of these specifications. The soils report is on file in the District office, 1995 Market Street, Riverside and is available for review upon request or can be downloaded from http://rcflood.org/Documents/Soils_Report_100007104.pdf.

SECTION 8 - NOT USED

SECTION 9 - PAYMENT

The contract prices shall include full compensation for all costs incurred under these Special Provisions and Detailed Specifications.

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DETAILED SPECIFICATIONS

SECTION 10 - MOBILIZATION

10.1 Description - The contract item Mobilization shall consist of expenditures for all preparatory work and operations, including but not limited to, those costs necessary for the movement of personnel, equipment, supplies and incidentals to the project site; for the establishment of all offices, buildings, construction yards and other facilities necessary for work on the project; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items on the project site as well as the related demobilization costs anticipated at the completion of the project.

The Contractor may be able to utilize the property located at 8616 California Avenue, City of Riverside, California. If the Contractor desires to utilize the site, he shall contact Nathan Freeman at the City of Riverside at 951.826.5374 who will facilitate discussions between the Contractor and Owner regarding the use of the site as a construction yard and other facilities necessary for work on the project.

10.2 Payment - The amount credited for Mobilization on each monthly progress payment shall be equal to the total of the amounts credited for work on all the other contract items for that monthly progress payment, up to a cumulative limit of eighty percent (80%) of the lump sum price bid for Mobilization. The remaining twenty percent (20%) of the lump sum price bid for Mobilization will be paid with the final payment.

Payment of the lump sum contract price for Mobilization shall constitute full compensation for all labor, materials, equipment, and all other items necessary and incidental to completion of this item of work.

The deletion of work or the addition of extra work as provided for herein shall not affect the price paid for Mobilization.

SECTION 11 - WATER CONTROL

11.1 Description - This section covers the contract item Water Control. Watersheds and/or urban or agricultural runoff areas are tributary to the project site at various locations, but do not necessarily follow the alignment of the project under current conditions. Surface water in varying quantities can be expected at any time of the year, and substantial runoff can be expected during periods of rainfall. Groundwater was indicated at 5' or more below the proposed invert at the time of the soils investigation for this project. All bidders shall make their own determination regarding what the surface and/or groundwater conditions will be at the time of construction, and their impact on the bidder's operations and construction phasing.

11.2 Water Control - The contract item Water Control includes the control and/or diversion of surface runoff as well as groundwater within the work area as required to complete the work. All work shall be carried on in areas free of water. Care should be exercised so that runoff or diversion flows do not erode, undermine or otherwise damage either facilities which have been constructed

or adjacent private properties. The responsibility for the protection of all existing and proposed improvements lies with the Contractor.

11.3 Measurement and Payment - The methods of controlling both surface and groundwater will be the responsibility of the Contractor. The contract lump sum price paid for Water Control shall include full compensation for all direct and indirect costs incurred under this section, and for doing all the work involved in controlling surface runoff and groundwater within the construction area, as specified in these Detailed Specifications, and as directed by the Engineer.

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

SECTION 12 - TRAFFIC CONTROL

12.1 Description - The contract item Traffic Control shall include labor, flagmen, lights, barricades, k-rails with temporary traffic screen, signs, materials, temporary bridges and equipment necessary to ensure that the vehicular and pedestrian traffic conforms to requirements as set forth in this section and as shown on the drawings.

12.2 Notification of Agencies - The Contractor shall notify the following agencies a minimum of 48 hours in advance of start of any street work and inform them of the proposed construction schedule and provide any additional pertinent information they may request:

AT&T Distribution (Anthony Kwan)	714.237.7126
AT&T Transmission (Joe Forkert)	714.963.7864
Charter (Kenneth Hughes)	951.343.5100
City of Riverside Fire Department - Main Administration	951.826.5321
City of Riverside Planning (Nathan Freeman)	951.826.5374
City of Riverside Public Utilities (Eric Escobar)	951.826.5821
City of Riverside Public Works (Sweta Patel)	951.826.5714
City of Riverside Solid Waste Management	951.351.6247
Metropolitan Water District (John Osornia)	951.710.5570
Riverside Unified School District	951.788.7135
Riverside Transit Agency	951.955.5000
Sunesys, Inc. (Ed Mulcahy)	951.264.9953
The Gas Company (David Castellanos)	909.335.7508
Underground Service Alert	800.227.2600
United States Postal Service	800.275.8777

The Contractor is not relieved of his responsibility of notifying the various departments and agencies mentioned above, even if their telephone numbers may have changed without notice.

The above agencies shall also be advised by the Contractor of any major change in the construction schedule that could restrict pedestrian or vehicular traffic.

The Contractor shall notify the public a minimum of ten (10) working days prior to start of road closure. The Contractor is also required to notify, in writing, the following as applicable: Fire Department, Sheriff, CHP, local newspaper, Trash pickup, School Districts, RTA, Post Master, UPS, Colleges, Local businesses, Local residents, State and local agencies involved, if affected.

12.3 Public Convenience and Access - The Contractor shall comply with the requirements of Section X of the General Provisions and shall provide continuous access to all private property. Additional provisions shall be made as necessary to protect the public and accommodate traffic with a minimum of inconvenience.

Closures or partial closures of the traveled way implemented by the Contractor shall be related to actual work being performed at the time. Closures shall not be maintained if work is not being performed. If the existing closure is not essential to the type of work being performed at the time, the traveled way shall immediately be restored to a safe condition for public use.

The Contractor shall provide temporary bridge crossings for all driveway entrances to be closed to vehicular access for any period exceeding 4 hours.

Temporary bridges shall have a minimum width of 12 feet for residential driveways and 24 feet for business driveways, and shall be designed for an AASHTO H20 truck loading. Steel plates placed over the trench shall have a minimum thickness of 1.25" and the surface shall be roughened or coated to provide a non-skid surface. For spans greater than 4 feet, a structural design shall be prepared by a Registered Civil Engineer and submitted to the District for review and approval.

The Contractor shall notify each resident in writing 3 days in advance of excavating past the affected driveway entrance. Such notice shall contain the expected day and period of time (not to exceed 4 hours) that the driveway is to be out of service. A copy of each letter shall be submitted to the Engineer.

12.4 Construction Signs and Traffic Control Plans - All construction signs, barricades, delineators, k-rails with temporary traffic screen, etc., shall conform with the U.S. Department of Transportation, Federal Highway Administration, "Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD), Part 6, latest edition", the MUTCD California Supplement, Part 6 along with the Uniform Sign Chart, and these Detailed Specifications. The Temporary Screened Barrier Type K shall be per Caltrans Standard T3A, and the staking of the Barrier Type K shall be per Caltrans Standard T3B with the screening per Caltrans Standard T4 modified for a plywood height of 4 feet. The cost of the screened temporary barrier shall include all labor, materials and equipment necessary for installing, removing and repairing the temporary screened barrier.

12.5 Flaggers - All personnel utilized as flaggers must be trained in the proper fundamentals of flagging and signaling.

12.6 Striping and Pavement Marking – Temporary and permanent striping shall be performed by the Contractor at his expense as directed by the Engineer. The Contractor shall restore the permanent striping immediately after resurfacing of the streets is completed. The Contractor shall notify Danny Cwiak of the City of Riverside at 951.826.5892 at least 48 hours prior to restriping.

All temporary traffic striping and pavement markings shall conform to Section 84 of the Caltrans Specifications and shall be acceptable to the Riverside County Transportation Department.

All pavement markings such as arrows, "STOP", "ONLY", reflectors, etc., shall be replaced by the Contractor using thermoplastic. Thermoplastic crosswalk, traffic stripes and pavement markings shall conform to the provisions in Section 84-1, "General" and 84-2, "Thermoplastic Traffic Stripes and Pavement Markings" of the Caltrans Specifications and these Detailed Specifications.

12.7 Payment - The contract prices paid for Traffic Control shall include full compensation for all material and labor costs incurred under this section including k-rails, k-rails staking and screening with temporary traffic screen per these Detailed Specifications. Contractor is advised that traffic plans as shown on the drawings may be modified as field conditions require. No additional payment shall be made for modifications to the traffic plan, striping and pavement marking.

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

SECTION 13 - CLEARING AND MISCELLANEOUS WORK

13.1 Description - This section covers the contract item Clearing and Miscellaneous Work as required for construction of the work. All objectionable materials shall be removed and disposed of outside of the limits of the construction easements and permanent rights of way.

13.2 Clearing and Miscellaneous Work - The contract item Clearing and Miscellaneous Work includes the removal and disposal of all vegetation, trees, roots, stumps, fences, pipes, all abandoned facilities, culverts, rocks, structures, existing concrete, concrete curbs and sidewalks and asphalt excluding those items defined specifically as excavation in the appropriate section.

Additionally included, but not limited to, is the following:

1. The temporary relocation of signs and mailboxes, and their reinstallation. Work involving mailboxes shall be coordinated with the Postal Service.

2. The stenciling and signage on top of all catch basins and drop inlets. Stenciling and signage will be provided by the District.

3. Removal of existing chain link fences, gates, posts, footings, and wood boards shall be removed and disposed of offsite.

4. Removal of existing irrigation lines, irrigation valves and backflow preventers shall be removed in coordination with City of Riverside Public Utilities and disposed of offsite.

5. Removal of existing landscaping adjacent to channel shall be removed and disposed of offsite.

6. Removing de-energized electrical pull boxes, electrical conduit and conductors in coordination with City of Riverside Public Utilities and disposed of offsite.

Finally, included in this item are those types of work as shown on the drawings not specified for pay under any other individual contract item.

13.3 Payment - The contract price paid for Clearing and Miscellaneous Work shall be full compensation for all costs incurred under this section.

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

SECTION 14 - EARTHWORK

14.1 Description - This section covers the contract items Excavation; Asphalt Concrete Excavation; Backfill; Controlled Low Strength Material (CLSM); and Filter Material.

14.2 General Excavation Requirements - Excavation shall be in conformance with Section 306 of the Greenbook Specifications. Access to trenches shall be in conformance with Section 306-1.1.4 and the manner of bracing excavations shall be in conformance with Section 306-1.1.6 of the Greenbook Specifications.

Excavation shall be kept to the minimum widths required for efficient placing of the reinforced concrete box or structure and the construction of the various other concrete structures. The maximum length of open trench shall be in conformance with Section 306-1.1.2 of the Greenbook Specifications.

In excavating for surfaces against which concrete is to be placed, care shall be exercised in removing the final lift. The foundation for all concrete structures including concrete channels and sideslopes will be inspected and tested after excavation. The subgrade shall be ninety percent (90%) relative compaction prior to the placement of concrete. Surfaces against which concrete is to be placed shall be free of debris, mud or ponded water. If subgrade compaction is deficient, subgrade shall be scarified, moisture conditioned to or slightly above optimum moisture content, and the surface proof rolled to a minimum ninety percent (90%) relative compaction. Subgrade preparation will not be measured or paid separately and no additional compensation will be allowed unless overexcavation is directed by Engineer.

Material which will not provide a suitable foundation shall be removed and replaced with compacted select material as directed by the Engineer. Please note that per the soils report dated

March 23, 2012, the moisture content of the soil ranged from approximately 10 to 21 percent within the anticipated excavation depths. Optimum moisture contents during laboratory testing ranged from 9 to 11 percent.

Any overexcavation shall be filled with select material compacted to ninety percent (90%) relative compaction and meeting the material requirements for backfill.

The Contractor shall remove slides and materials eroding into the work, and the slopes and grades refinished to original grades as specified.

The Contractor shall dispose of all surplus excavated material outside of the limits of the construction easements and permanent rights of way.

The removal of rock material from within the excavation paylines which requires the use of blasting or equipment beyond that normally necessary to accomplish the excavation (as determined by the Engineer) shall be paid for in accordance with Section VII, Article 7.03 of the General Provisions. The cost of removal and disposal (including trucking) of rock away from the jobsite will be paid for under the contract item Excavation and no additional compensation will be allowed.

Blasting, when necessary, as approved by the Engineer shall be in accordance with Section 19-2.03E of the Caltrans Specifications.

The Contractor's attention is directed to the General Provisions, Section V, Article 5.09 on the use of explosives and Article 5.11 in regard to unforeseen difficulties.

14.3 Excavation - The contract item Excavation covers the **removal and disposal offsite of all asphalt, aggregate base, abandoned pipelines, concrete channel and any other interfering concrete** from within the excavation paylines as specified and as required for the construction and installation of the reinforced concrete box, junction structures, headwalls, manholes, transitions and pipe as shown on the drawings and the disposal of all surplus material. All HMA and P.C.C. and existing storm drains to be removed shall be sawcut unless otherwise specified.

14.4 Asphalt Concrete Excavation – The contract item Asphalt Concrete Excavation covers the header cut and removal of asphalt concrete pavement to the depths and dimensions as specified and as shown on the drawings and the disposal of all surplus material.

Exclusive of this contract item is the asphalt concrete excavation within the trench excavation limits which will be measured and paid by the contract item Excavation.

Included in this contract item is the recompaction of the existing Aggregate Base to 95% relative compaction should the Aggregate Base be exposed after removal of existing asphalt concrete.

The cold planing machine shall have a cutter head at least 72 inches wide and shall be operated so as not to produce fumes or smoke.

The final cut shall result in a uniform surface conforming to the typical cross sections. The outside lines of the planed area shall be neat and uniform. The road surfacing to remain in place shall not be damaged in any way.

The material planed from the roadway surface, including material deposited in existing gutters or on the adjacent traveled way, shall be immediately removed from the work site and disposed of outside the right of way. The removal crew shall follow within 50 feet of the planer unless otherwise directed by the Engineer.

14.5 General Backfill Requirements - Whenever fill is specified or required (except for pipe backfill) the work shall be performed as set forth in Sections 300-4.1 to 300-4.8 of the Greenbook Specifications. Backfill for pipe and box shall conform to Section 306-12 of the Greenbook Specifications, **except jetting is not allowed**.

No backfill materials shall be placed against the outside walls of cast-in-place concrete structures until the concrete has developed eighty percent (80%) of its design strength. No fill or traffic will be permitted on the top of any cast-in-place concrete structure until the concrete in the structure has attained its design strength. Compressive strength will be determined by test cylinders taken by the Engineer. A maximum of six (6) test cylinders per structure will be made and paid by the District for the following day breaks: 7, 14, 21, 28, 28 days, and one break to be agreed upon by the Engineer and Contractor. Any additional test cylinders requested by Contractor shall be deducted from the monthly progress payment at a rate of $500.00/cylinder.

Regardless of the method of densification, backfill material shall not be placed against any reinforced concrete structure until the structure has been inspected and approved for backfilling by the Engineer.

Backfill will be accomplished by either mechanical methods or by placement of Controlled Low Strength Material (CLSM) as described in (1) and (2) below:

(1) Mechanical Compaction - Backfill shall be mechanically compacted by means of tamping rollers or other mechanical tampers. Impact-type pavement breakers (stompers) will not be permitted unless otherwise approved by the Engineer.

All backfill material for structures shall be placed in uniform layers and shall be brought up uniformly on each side of the structure. The thickness of each layer of backfill shall not exceed 8 inches before compaction unless otherwise approved by the Engineer. For hand directed mechanical compactors, the thickness of each layer shall not exceed 4 inches before compaction.

All relative compaction tests will be made by the Engineer in conformance with ASTM D1557. Whenever relative compaction is specified to be determined by ASTM D1557.

(2) Controlled Low Strength Material (CLSM) – Controlled Low Strength Material (CLSM) placement for backfill shall be used when specified or approved by the

Engineer. CLSM backfill shall conform to Section 201-6 of the Greenbook Specifications and as specified in Section 16.

Approval to use specific methods and compaction equipment shall not be construed as guaranteeing or implying that the use of such methods and equipment will not result in damage to adjacent ground, existing improvements or improvements installed under the contract, nor shall it be construed as guaranteeing proper compaction. The Contractor shall make his own determination in this regard.

All backfill around structures and pipe shall be compacted to not less than ninety percent (90%) relative compaction. Where such material is placed under existing or proposed paved roadways, the top 3 feet, measured from the subgrade plane, shall be compacted to ninety-five percent (95%) and shall be compacted by Method (1).

Trench bottoms for structures and pipe shall be graded to provide firm and uniform bearing throughout the entire length of the structures and pipe.

14.6 Testing – District personnel shall perform compaction tests as described below using either the ASTM D1556 (sand cone) or ASTM D6938 (nuclear) test method. These tests represent the minimum required. Additional tests may be taken at the Engineer's discretion.

1. Mainline Trenches – A complete series of compaction tests will be taken for each 4-foot thickness of backfill placed. Each series will consist of tests taken at approximate maximum intervals of 300 feet. Each series will begin above the structure.

2. Connector Pipe Trenches – Compaction tests will be taken on 50% of the laterals, one test for each 4-foot of depth.

3. Any failed test will result in a retest.

14.7 Backfill - The contract item Backfill includes all backfill material compacted as specified around the various concrete structures and pipe within the paylines as shown on the project drawings.

14.8 Controlled Low Strength Material (CLSM) - The contract item Controlled Low Strength Material (CLSM) shall be the placement of CLSM as specified on drawings and as directed by the Engineer.

CLSM material conformance is specified in Section 16 of these specifications.

14.9 Filter Material - The contract item Filter Material includes all filter material to be placed below the reinforced concrete pipe, precast RCB, cast-in-place RCB and various other structures.

The Contractor shall use filter material for precast RCB. However, filter material for cast-in-place RCB, pipe and other concrete structures will be determined from field conditions as directed by the Engineer.

The materials for filter material shall conform to Sections 90-1.02C and 90-1.02C(4)(a) of the Caltrans Specifications. Grading shall meet the requirements for 1" x No. 4 coarse aggregate as per Section 90-1.02C(4)(b) of the Caltrans Specifications. The filter material shall be consolidated and the surface trimmed to final grade as directed by the Engineer.

14.10 Measurement - Excavation; Asphalt Concrete Excavation; Backfill; Controlled Low Strength Material (CLSM); and Filter Material beyond the limits established by the drawings, unless ordered in writing by the Engineer, will not be measured for payment.

The excavated material shall be measured from the ground surface existing at the start of excavation, as determined from surveyed cross sections taken by the District, to the lines, grades and dimensions shown on the drawings. Longitudinal limits of the excavations as shown on the profile drawings terminate at a vertical plane at the limits of the structure, measured along the longitudinal axis of the various structures.

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

Measurement for payment for the contract item Backfill 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 structure, measured along the longitudinal axis of the various 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 the contract item Controlled Low Strength Material (CLSM) 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 structure, measured along the longitudinal axis of the various 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.

14.11 Payment - The contract prices paid for Excavation; Asphalt Concrete Excavation; Backfill; Controlled Low Strength Material (CLSM); 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 items Trench Safety System and Falsework; and Solid Sheeting Trench Safety System. These items are defined as methods 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, and other systems that will provide necessary protection. Solid sheeting trench safety system include solid sheeting, bracing support systems and any other support system necessary to adequately support material adjacent to existing improvements to be retained. The items include the furnishing and implementation of the safety system, design, labor and necessary equipment as required by Section 306-1.1.6 of the Greenbook Specifications or as directed by the Engineer.

15.2 Trench Safety System and Solid Sheeting 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 sliding trench "shield box" will be adequate for all trenching situations encountered on a given project. The Contractor should be prepared with alternative designs should the circumstances dictate the use of such. In addition, the Contractor shall design and implement solid sheeting trench safety system for the construction of cast-in-place reinforced concrete box.

Solid sheeting trench safety system is required from Station 10+00 to Station 17+12.

Contractor shall under no circumstances encroach on the minimum distances of 1.5' from the edge of the trench to the edge of the 12KV through 69KV Riverside Public Utility Power Poles. In addition, Contractor shall under no circumstances encroach on the minimum distances of 10' from the lowest hanging overhead powerline on the Riverside Public Utility Power Pole. The contract item Solid Sheeting Trench Safety System has been

added to specifically maintain the required minimum clearances from the existing 12KV power poles along this reach. Solid sheeting trench safety system shall have tight sheeting, solid members of a shoring system and bracing system that retain the earth material in position and in turn are supported by other members of the shoring system. Tight sheeting is sheeting that are butted close together to form a continuous solid wall to resist the lateral earth pressure, water, or other material. No loose material will be allowed to fall outside or underneath the solid sheeting trench safety system within the trench excavated limits.

Trench safety system and solid sheeting 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 all 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 prices paid for the items Trench Safety System and Falsework; and Solid Sheeting Trench Safety System shall include full compensation for all costs incurred under this section. Payment of the lump sum contract price for Trench Safety System and Falsework; and Solid Sheeting Trench Safety System shall constitute full compensation for furnishing shoring, shoring design and submittals, labor and necessary equipment, for the duration of related construction work in area, to protect property and improvements as specified, and removal of said shoring when related work is complete.

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 (a minimum of 70 drum revolutions and a maximum of 250 drum revolutions are required to provide sufficient agitation to the concrete mix) 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	Boxes, and Transition Structure Nos. 2 and 4	4000*
A	6	Manholes	3250*
B	5	Local Depressions, Cutoff Walls, Junction Structure No. 3 and Miscellaneous Concrete not otherwise specified	3000*
E	1/2 Max.	Controlled Low Strength Material (CLSM)	50-100 (hand excavatable)

*Note: Concrete for use in structures constructed from State of California, Department of Transportation Standard Plans, "Greenbook Specifications" Standard Plans, City of Riverside Standard Plans, City of Riverside Public Utilities Department 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
The inverts of: Reinforced Concrete Box, Junction Structures, Transition Structures and Manholes.	1-1/2" Maximum
Box Deck and Walls, Curb, Curb and Gutter, Sidewalk, other Miscellaneous Concrete not otherwise specified. All other concrete structures.	1" Maximum
Controlled Low Strength Material (CLSM).	3/8" Maximum*

*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.

Controlled Low Strength Material (CLSM) 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
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 No. 4	1600 psi
Cast-In-Place Concrete Pipe	6 hours
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.

The finish on exposed formed surfaces, between Station 10+36.04 to Station 16+66.93, shall conform to Section 51-1.03F(5) titled "Finishing Roadway Surfaces" of the Caltrans Specifications for the top of cast-in-place reinforced concrete boxes. The finish on all other exposed formed cast-in-place reinforced concrete box surfaces shall conform to Section 51-1.03F(3) titled "Class 1 Surface Finish" of the Caltrans Specifications.

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) Curing - Controlled Low Strength Material (CLSM) must achieve a maximum indentation diameter of three (3) inches as determined under ASTM D6024 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.

The Contractor shall implement the weakened plane joints in the top deck of the box surface by cutting a groove in the surface with a power driven saw. Grooves shall comply with requirements of Section 42-1.03B and 42-2.03C of the Caltrans Specifications. The weakened plane joints shall be sawed within 12 hours after the concrete has been placed at a spacing of 10' from Station 10+00 to Station 17+12.

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.)

16.11 Use of the 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 structure.

Equipment loading and vehicular use of box invert shall not be allowed until concrete reaches its compressive strength specified in Section 16.2.

A rubber track small crane with capacity not to exceed 10 tons will be permitted to operate on the concrete 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.

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.

16.12 Class "A" Concrete, Reinforced Concrete Box (5' H x 14' W) - The contract item Class "A" Concrete, Reinforced Concrete Box (5' H x 14' W) covers the concrete and all grade 60 reinforcing steel, with accessories required for the construction of 5' H x 14' W reinforced concrete box from

Station 10+36 to Station 16+67 per the construction drawings and specifications. Precast reinforced concrete box shall not be considered for this reach.

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 with sand equivalent of 30 or higher.

The City of Riverside will utilize the median area outside the reinforced concrete box for planting shrubs. The Contractor shall adhere to the dimensions of the wall thickness for all reinforced concrete boxes per Caltrans Standards.

Equipment loading and vehicular use of box deck slab shall not be allowed until concrete reaches its compressive strength specified in Section 16.2.

16.13 Class "A" Concrete, Reinforced Concrete Box or Precast Reinforced Concrete Box (4' H x 8' W) - The contract item Class "A" Concrete, Reinforced Concrete Box or Precast Reinforced Concrete Box (4' H x 8' W) covers the concrete and all Grade 60 reinforcing steel, with accessories required for the construction of reinforced concrete box or the precast reinforced concrete box (4' H x 8' W) from Station 17+87.85 to Station 26+49.75 and from Station 27+15.75 to Station 30+38.97 per the construction drawings and specifications. 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.

In the event the Contractor elects to utilize the Precast Reinforced Concrete option for this item, Section 31 - Precast Reinforced Concrete Box shall be required.

16.14 8" Type I Concrete Curb and Gutter per City of Riverside Standard No. 200 - The contract item 8" Type I Concrete Curb and Gutter per City of Riverside Standard No. 200 covers all labor, equipment, materials, earthwork to establish curb subgrade, forms, joints, curing, form removal and finish as shown on the drawings and as required by the City of Riverside Standards and Specifications and these Detailed Specifications.

16.15 8" Type II Concrete Curb per City of Riverside Standard No. 200 - The contract item 8" Type II Concrete Curb per City of Riverside Standard No. 200 covers all labor, equipment, materials, earthwork to establish curb subgrade, forms, joints, curing, form removal and finish as shown on the drawings and as required by the City of Riverside Standards and Specifications and these Detailed Specifications.

16.16 4" Thick Concrete Sidewalk per City of Riverside Standard No. 325 - The contract item 4" Thick Concrete Sidewalk per City of Riverside Standard No. 325 covers all labor, equipment, materials, earthwork to establish curb subgrade, forms, joints, curing, form removal and finish as shown on the drawings as required by the City of Riverside Standards and Specifications and these Detailed Specifications.

16.17 Transition Structures - The contract items Transition Structure No. 2, Station 16+66.93; Transition Structure No. 2, Station 17+77.85; Transition Structure No. 2, Station 30+38.97; and Transition Structure No. 4, Station 10+01.04 cover the complete construction of these various structures, including reinforcing steel but exclusive of earthwork.

16.18 Junction Structure No. 3 - The contract item Junction Structure No. 3 covers the complete construction of these structures, including additional reinforcing steel in the box and Class "B" Concrete shall be used for backfill around connector pipe, exclusive of earthwork.

16.19 Manholes - The contract items Manhole No. 3; and Caltrans Manhole Standard B7-11, Detail U43 with Pressure Type Frame and Cover per MH 256, cover the complete construction of these various structures, including reinforcing steel, exclusive of earthwork and the miscellaneous iron and steel.

For Manhole No. 3, 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. For Manhole No. 3, the cast iron manhole frame and cover shall be installed with pressure type frame accurately set to finished grade of pavement, in mortar well tamped around the perimeter of frame to ensure full bearing.

For Caltrans Manhole Standard B7-11, Detail U43 with Pressure Type Frame and Cover per MH 256, the cast iron manhole frame and cover shall be installed with pressure type frame accurately set flush to the top of the exposed RCB.

16.20 Measurement - Measurement for payment for the contract item Class "A" Concrete, Reinforced Concrete Box (5' H x 14' W) 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 "A" Concrete, Reinforced Concrete Box or Precast Reinforced Concrete Box (4' H x 8' W) will be the number of lineal feet constructed, measured along the centerline of the reinforced concrete box.

Measurement for payment for the contract items Transition Structure No. 2, Station 16+66.93; Transition Structure No. 2, Station 17+77.85; Transition Structure No. 2, Station 30+38.97; Transition Structure No. 4, Station 10+01.04; Junction Structure No. 3; Manhole No. 3; and Caltrans Manhole Standard B7-11, Detail U43 with Pressure Type Frame and Cover per MH 256 will be the number of each type constructed as specified.

Measurement for payment for the contract items 8" Type I Concrete Curb and Gutter per City of Riverside Standard No. 200; and 8" Type II Concrete Curb per City of Riverside Standard No. 200 will be the number of lineal feet constructed, measured along the top of the curb at the curb face.

Measurement for payment for the contract item 4" Thick Concrete Sidewalk per City of Riverside Standard No. 325 will be the number of square feet constructed as specified.

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

16.21 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 AND SECTION 18 - NOT USED

SECTION 19 - FLEXIBLE PAVEMENT CONSTRUCTION

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

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.

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 the final course for Type A shall consist of ½-inch aggregate.

The combined aggregate gradation and quality characteristics for HMA Type A 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/ormt/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 °C	T48	230	230	230	230
Solubility, Minimum %[b]	T44	99	99	99	98.5
Viscosity[c] at 135 °C, Maximum, Pa·s	T316	3.0	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, °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, °C Minimum G*/sin(delta), kPa	T315	64 2.20	64 2.20	70 2.20	64 2.20
Ductility at 25 °C Minimum, cm	T51	75	75	75	-
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum (delta), %	T315	-	-	-	Note g 80
PAV[f] Aging, Test Temperature, °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, °C Maximum G*/sin(delta), kPa	T315	31[d] 5000	28[d] 5000	34[d] 5000	31 5000
Creep Stiffness, Test Temperature, °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 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.**

19.11 Payment - The contract prices paid for Aggregate Base, Class 2; and Hot Mix Asphalt (HMA) 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; and Sierra 2-Rail Plastic Fence (or approved equal).

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 Sierra 2-Rail Plastic Fence (or approved equal) - The contract item Sierra 2-Rail Plastic Fence (or approved equal) includes furnishing and installing with new material per the Sierra 2-Rail Recycled Fence manufactured by Environmental Specialty Products or approved equal by the City of Riverside and the District Engineer for this portion of the work as shown on the drawings and as directed by the Engineer. Included in this item are all posts, rails, Class "B" Concrete Post Foundation, bolts, mounting brackets, washers, anchors, and nuts. All posts shall be set in Class "B" concrete.

Also included in this item of work will be the cutting of posts to custom fit and install over the reinforced concrete box, and any preparatory work needed on top of reinforced concrete box for clean and custom fit installation.

20.4 Measurement - Measurement for payment for the contract items 6-Foot Chain Link Fence; and Sierra 2-Rail Plastic Fence (or approved equal) will be the number of lineal feet of new fencing installed measured along the top of the fence parallel to the ground.

Excavation and concrete required for all fencing or posts will not be measured for payment.

20.5 Payment - The contract price paid for 6-Foot Chain Link Fence; and Sierra 2-Rail Plastic Fence (or approved equal) 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; Installation of Reinforced Concrete Box Internal Liner (from Station 30+28 to Station 30+64); Reconstruction of Existing 8" VCP Sewer Encased Crossing (two locations); Protection of Existing 8" Encased Waterline (three locations); 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. All covers shall be provided with socket set screw locking devices. Drill and tap two holes to a depth of one-inch at 90 degrees to pick hole and install 3/4-inch x 3/4-inch stainless steel socket set screws with 3/8-inch recessed hex head. All threads shall be National Coarse threading.

(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 Installation of Reinforced Concrete Box Internal Liner (from Station 30+28 to Station 30+64) - The contract item Installation of Reinforced Concrete Box Internal Liner (from Station 30+28 to Station 30+64) includes all equipment, material, labor, concrete surface preparation, submittals necessary for the complete installation and sealing of the internal surface areas of the constructed reinforced concrete box.

21.3.1 Material - The liner material shall be CIM 1000 TG and as specified in this Section by C.I.M. Industries, Inc. or approved equal by Metropolitan Water District (MWD) and the Engineer. The material shall be at such a rate to provide a final minimum dry thickness of 0.125-inch (125-mils) which may require two applications.

21.3.2 Submittals - The Contractor shall provide the following submittals for this item:

- Manufacturer's product data including the interior surface preparation of the constructed reinforced concrete box, product application and curing.
- 3-inch by 1-inch cured high performance lining, 0.006-inch (60-mils) thick samples and reinforcing fabric and joint cover sheet.
- List of completed project references by the Applicators assigned for the project with a minimum 2-years' experience in which they applied and installed the CIM 1000 TG product.
- Applicator's supervisor certificate indicating completion of manufacture's contractor training program.
- Manufacturer's extended warranty for underground unexposed structures.

21.3.3 Pre-Application Meeting - The Contractor shall schedule a pre-application meeting five (5) working days before the start of application of the high-performance lining to review requirements of these specifications regarding materials, protection of adjacent work, surface preparation, application, curing, field quality control, cleaning and coordination with other work. The meeting attendees shall include parties directly affecting work of this section, including the Contractor, Sub-contractor, Engineer, Applicator, MWD's Representative and Manufacturer's Representative.

21.3.4 Delivery, Storage and Handling - The Contractor shall adhere to the manufacturer's specification regarding the delivery, storage and handling of the materials to preserve the integrity of such material.

21.3.5 Environmental Requirements - The Contractor shall not apply material installation in wet weather or when rain is imminent. The material shall be applied only when the surface is a minimum 50 degrees F (10 degrees C) and a minimum of 5 degrees F (3 degrees C) above dew point. The Contractor shall consult manufacturer for application instructions if the ambient or surface temperature is below 50 degrees F (10 degrees F). The Contractor shall not apply to porous substrates when substrate or ambient temperatures are rising and shall not apply over substrates that are frozen or contain frost.

21.3.6 Warranty - The Contractor shall secure the manufacturer's extended warranty for a minimum of 5 years for material of unexposed underground structures and 1 year for labor from the sub-contractor.

21.3.7 High Performance Coating and Patching Linings - High-performance coating and patching linings material shall be CIM 1000 TG which consists of two-component, high solids, elastomeric asphalt modified urethane. The material is designed for spray, squeegee, or roller application. At a minimum, the material shall meet the manufacturer technical data sheet and manufacturer specifications.

21.3.8 Bonding Agent - The bonding agent product shall be CIM VOC Compliant Bonding Agent consisting of organosilane compound dispersed in acetone.

Contractor shall ensure a continuous and uniform bond between surfaces of lining layers to achieve minimum specified liner thickness.

Bonding agent material shall comply with the following material characteristics:

1. Material Solids by Volume shall be less than 1 percent.
2. Material resistance to allowing Volatile Organic Compounds (VOC) shall be 0 pounds per gallon (0 g/L).

21.3.9 Reinforcing Fabric and Joint Cover Sheet - Fabric material shall be CIM Scrim which consists of stitch bonded polyester. Fabric shall be compatible with lining materials and shall comply with the following specifications.

1. Material Weight shall be 3 ounces per square yard (100 g/m^2).
2. Material Tensile Strength per ASTM D1682 shall be 57.1 pounds (30 kg).
3. Material Elongation per ASTM D1682 shall be 61.65 percent.
4. Material Mullen Burst Strength per ASTM D3726 shall be 176.8 pounds per square inch (1,215 kPa).
5. Material Trapezoid Tear Strength per ASTM D1117 shall be 16.1 pounds (7.2 kg).

21.3.10 Contractor's Inspection - Contractor shall inspect substrate and adjacent areas where high-performance lining will be applied. Notify the Engineer of conditions that would adversely affect the application or subsequent utilization of the high-performance lining. Do not proceed with application until unsatisfactory conditions are corrected.

21.3.11 Protection - The Contractor shall protect adjacent work and surrounding areas from contact with high-performance lining.

21.3.12 Surface Preparation for Reinforced Concrete Box - Prepare surface in accordance with manufacturer's instructions. Contractor shall provide clean, dry, and structurally sound concrete surface. The Contractor shall:

1. Ensure concrete is dry, and is free of release agents and curing compounds before application of high-performance lining.
2. Remove surface laitance and expose the underlying aggregate.
3. Prepare concrete surface to receive high-performance lining by water blasting at 3000 psi pressure.
4. Remove sharp concrete edges and projections.
5. Holes in the concrete surface that will "burp" air and cause holes or bubbles in the high-performance lining shall be filled. Closed bug holes or bug holes with a "blind" surface shall be opened and repaired.

21.3.13 Moisture Tests - The Contractor shall not apply CIM 61TN/61TN RC primer or high-performance lining to concrete surface unless two or more of the flowing moisture tests confirm appropriate moisture levels for properly prepared substrates:

1. Material Plastic Sheet Method per ASTM D4263 shall be a pass/fail utilizing Vapor Test
2. Material Relative Humidity Test shall be less than 75 percent relative humidity at 70 degrees F utilizing Vapor Test
3. Material Calcium Chloride Test shall be less than 5 pounds per 1,000 square feet per 24 hours utilizing Vapor Test
4. Material Radio Frequency Test shall be less than 5 percent moisture utilizing Moisture Test

21.3.14 Application - The Contractor shall apply primer to concrete surface a minimum of 5-mils wet thickness for 61TN/61TN RC or minimum of 15-mils wet thickness for CIM EMT. A uniform lining free of indentations or pinholes is necessary to minimize outgassing effects curing the application of the high-performance lining to porous surfaces such as concrete. Surfaces may require additional coats to obtain a pinhole free finish.

The Contractor shall apply fabric back tape directly to seams or joints that are intended to be top-coated with CIM. Consult manufacturer for appropriate tape width. Apply high-performance lining directly to a clean and dry surface or to reinforcing fabric. Apply a 6- to 12-inch wide strip of joint cover sheet over cracks over 1/8-inch wide, non-working joints, and edges. Adhere center joint cover sheet over all joints by applying a tack coat of the high-performance lining. Apply sufficient high-performance lining to achieve the specified thickness.

The Contractor shall prepare for joint lines should rain or other conditions require work stoppage or extended delay. Install joint lines clean and straight. Install overlap 6-inches minimum to ensure an impervious joint. Severely abrade with wire brush or sandpaper and apply bonding agent to all areas where the high-performance lining has cured beyond its recoat window.

21.3.15 Curing - Cure high-performance lining in accordance with manufacturer's instructions. Allow sufficient time for solvents to evaporate from the cured high-performance lining before placing into service. Allow a minimum solvent release time of 24-hours to 48-hours.

21.3.16 Cleaning - Remove and dispose of all temporary materials used to protect adjacent work and surrounding areas. Immediately remove and clean high-performance lining materials from surfaces not intended to receive the materials.

21.4 Reconstruction of Existing 8" VCP Sewer Encased Crossing (two locations) - The contract item Reconstruction of Existing 8" VCP Sewer Encased Crossing (two locations) covers the following:

Extreme caution shall be used during the complete removal of existing VCP sewer (approximately 20' long) crossing under the new RCB; reconstruct new 8" Ductile Iron Pipe (DIP) Sewer in a new 14" steel pipe conductor casing centered with 2" by 2" redwood skids and well graded sand to fill annulus space, with the entire assembly embedded in Class "B" concrete and reinforcing steel in conformance with Section 16 of these Detailed Specifications and as shown on Sheet No. 8 of the drawings.

This item includes the furnishing and installation of all materials, parts, fittings, earthwork, pipes, casing, sand, redwood skids, Class "B" Concrete, reinforcing steel, and temporary sewer bypass for both crossings at Station 12+14 and Station 14+77 shall be included in this pay item. The Contractor shall coordinate and secure City of Riverside Public Utilities and District approvals regarding the temporary sewer bypass.

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

21.5 Protection of Existing 8" Encased Waterline (three locations) - The contract item Protection of Existing 8" Encased Waterline (three locations) covers the following:

Extreme caution shall be used during excavation of the existing 12" and 24" steel casing waterlines. After exposing the top of the pipe to the spring line, a 30-pound felt roofing material paper shall be wrapped around the top of pipe followed by placing CLSM material to the limits shown on Sheet No. 8 of the drawings. CLSM material shall be in conformance with Section 16 of these Detailed Specifications and as shown on Sheet No. 8 of the drawings.

This item includes furnishing and installation of all materials, earthwork, CLSM for the crossings at approximate Station 12+22.5, Station 14+94, and Station 17+85 shall be included in this pay item.

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

21.6 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 the drawings, as determined by the Engineer. All Extra Directed Work shall be performed only as directed in writing by the Engineer and in accordance with all applicable standards and specifications.

21.7 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.

No measurement for payment will be made for the lump sum contract item Installation of Reinforced Concrete Box Internal Liner (from Station 30+28 to Station 30+64).

No measurement for payment will be made for the lump sum contract item Reconstruction of Existing 8" VCP Sewer Encased Crossing (two locations).

No measurement for payment will be made for the lump sum contract item Protection of Existing 8" Encased Waterline (three locations).

Measurement for payment for contract item Extra Directed Work will be as directed by the Engineer, depending on the scope of the work being performed.

21.8 Payment - The contract prices paid for Miscellaneous Iron and Steel; Installation of Reinforced Concrete Box Internal Liner (from Station 30+28 to Station 30+64); Reconstruction of Existing 8" VCP Sewer Encased Crossing (two locations); and Protection of Existing 8" Encased Waterline (three locations) shall include full compensation for all costs incurred under this section.

Full compensation for the contract item Extra Directed Work shall be 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 26 - NOT USED

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 - NOT USED

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. R8-2015-0004.

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. 2010-0014-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_100007104.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"**. A copy of the "California Stormwater BMP Handbook – Construction", 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. R8-2015-0004. 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. R8-2015-0004. This Order can be downloaded from http://www.waterboards.ca.gov/santaana/board_decisions/adopted_orders/orders/2015_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 Riverside Public Utilities (RPU) Power Pole Protection Plan.

30.2 Riverside Public Utilities (RPU) Power Pole Protection Plan - The contract item Riverside Public Utilities (RPU) Power Pole Protection Plan covers all labor, material, equipment and plans. Plans shall be prepared by the Contractor and submitted to the Engineer and RPU for their review and approval per RPU requirements. The Contractor shall contact Kelly Starkey at 951.840.8629 at least 5 days prior to performing any work within 10 feet of the power poles.

Contractor shall under no circumstances encroach on the minimum distances of (1.5') from the edge of the trench to the edge of the 12KV through 69KV Riverside Public Utility Power Poles. In addition, Contractor shall under no circumstances encroach on the minimum distances of (10') from the lowest hanging overhead power line on the Riverside Public Utility Power Pole.

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

30.3 Measurement and Payment - The contract lump sum price paid for Riverside Public Utilities (RPU) Power Pole Protection Plan will be made upon District and RPU approval of the Power Pole Protection Plan and shall include full compensation for all costs incurred to produce,

secure District and RPU approval and implementation of Power Pole Protection Plan during construction.

SECTION 31 – PRECAST REINFORCED CONCRETE BOX

31.1 Description – This section, if selected by Contractor, includes the installation of Precast Reinforced Concrete Box (PRCB), which shall be paid for per contract item Class "A" Concrete, Reinforced Concrete Box or Precast Reinforced Concrete Box (4' H x 8' W) 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 as shown on the plans. The Contractor shall follow Sections 216 and 306-10 of the Greenbook Specifications except as noted in the following sections.

31.3 Materials – The materials used for PRCB shall comply with Section 216-2 of the Greenbook Specifications except as follows:

Filter Material shall be used as Leveling Bed Material. Filter Material shall be installed, measured and paid for as described in Section 14 of these Detailed Specifications.

31.4 Fabrication – The Fabrication for the PRCB shall conform to Section 216-3 of the Greenbook 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 and one-half (2.5) inches.

All splices or laps must be tied.

PRCB sections shall be fabricated with one end beveled where the curves, grade breaks or angle points shown on the drawings would otherwise result in a clear space greater than 1 inch measured at the extreme ends. Beveled sections must be identified on the Shop Drawings and PRCB Layout Diagrams.

The interior surface of the PRCB shall be smooth and well finished. The manufacturer may be required to provide a representative section to be used to determine the acceptable finish by the Engineer.

31.5 PRCB Shop Drawings, Calculations, and Layout Diagrams – PRCB Shop Drawings and Layout Diagrams shall be prepared and submitted in accordance with the Greenbook Specifications, with the following additions.

Shop Drawings shall show the necessary details of all reinforcing steel and lifting devices and locations for all PRCB sections.

The Contractor must provide engineered special designs for all PRCB sections that incorporate openings for manholes and junction structures not already detailed on the plans. Shop Drawings and supporting engineering calculations for these specially designed sections 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 2-5.3.1 of the Greenbook Specifications. No manufacturing of any specially designed PRCB sections will be allowed prior to the approval of the Shop Drawings.

The Shop Drawings and PRCB Layout Diagrams must explicitly identify which joints are beveled and the 'drop' dimension for each.

31.6 Basis of Acceptance - The basis of acceptance of PRCB shall be dependent on whether the plan fabricating the PRCB sections is currently certified on the Caltrans Authorized Facility Audit List for Structural Precast Concrete, (http://www.dot.ca.gov/hq/esc/Translab/OSM/documents/smdocuments/Internet_auditlisting.pdf) as follows:

a) If the PRCB Manufacturing Plant is NOT certified on Caltrans Authorized Facility Audit List:

The basis of acceptance shall be full compliance with these Specifications demonstrated through Contractor-supplied third party inspections and verification in accordance with Section 31.7 of these Detailed Specifications.

b) If PRCB Manufacturing Plant IS certified on Caltrans Authorized Facility Audit List:

The basis of acceptance shall be provision of a Certificate of Compliance conforming to Section 4-1.5 of the Greenbook Standard Specifications from the certified manufacturing plant **BEFORE** any PRCB is ordered or fabricated. The Contractor shall supply documentation to the satisfaction of the Engineer, that the plant is currently certified on the Caltrans Authorized Facility Audit List.

Either acceptance, however, shall be considered a tentative acceptance. Final acceptance will only be made when the work is completed.

31.7 Contractor Supplied Third-Party Inspection of PRCB Plant - If the PRCB is fabricated at a plant that is NOT currently certified on the Caltrans Authorized Facility Audit List, the Contractor, at its expense, shall engage a Qualified Inspector or Accredited Testing Laboratory to inspect the materials, equipment and manufacture of the PRCB.

The PRCB inspections shall be conducted for every 400 feet or 50 units and shall include cage manufacturing, curing processes, batching equipment and process, aggregate and cement storage, concrete mix designs and product handling.

The Qualified Inspector or Accredited Testing Laboratory shall be approved by the Engineer and:

1. Either be registered as a Civil Engineer in the State of California or have a current Plant Quality Personnel Certification, Level II from the Precast/Prestressed Concrete Institute; and
2. Be a subcontractor providing only quality control inspection services; and
3. The Inspector or Accredited Testing Laboratory must not be affiliated with, employed or compensated by any material provider, the PRCB manufacturer, or any other subcontractor providing other services or materials for this project.

The Inspection Reports to be submitted to the Engineer shall include, at a minimum:

1. Plant location;
2. Names of all inspectors and the specific inspections they performed that day;
3. Verification of compliance with these contract documents for every 400 feet or 50 units;
4. Any problems or deficiencies discovered;
5. Any testing or repair work performed; and
6. Daily production reports.

The Third-Party Inspector shall forward all daily reports to the Engineer on a weekly basis. Any problems or deficiencies discovered shall be immediately reported to the PRCB manufacturer and to the Engineer. Deficiencies shall be corrected to the satisfaction of the Engineer, or the affected products must be replaced at no cost to the District.

31.8 Installation of PRCB - The installation of PRCB shall comply with Section 306-10 of the Greenbook Specifications, except as follows:

Earthwork shall conform to Section 14 of these Detailed Specifications and the paylines shown on the drawings. No quantity adjustments will be made for the PRCB installation if this option is selected.

Filter Material shall be used in place of Leveling Bed Material. Filter Material shall be installed, measured and paid for as described in Section 14 of these Detailed Specifications, within the paylines shown on the drawings.

The finishing of joints shall be in accordance with Section 306-10.6 of the Greenbook Standard Specifications with the exception that preformed flexible joint sealant shall NOT be used to fill the joint annular space on the inside of the PRCB Section. The interior annular space of all joints shall be filled with concrete or mortar as otherwise required per the Greenbook Standard Specifications, and troweled smooth so that the PRCB will form a continuous conduit with a smooth uniform interior surface. Tongue and groove ends of the PRCB shall be free from any deleterious substance or condition, which might prevent a satisfactory mortar at the joint.

External Sealing Bands shall be installed on top of the PRCB joints as shown on the Greenbook Standard Plans.

31.9 Precast Reinforced Concrete Box (PRCB) – The contract item Precast Reinforced Concrete Box (PRCB) includes the complete furnishing and installation of the various PRCB sizes as specified, exclusive of Earthwork and Filter Material.

31.10 Measurement – If Precast Reinforced Concrete Box (PRCB) is selected by the Contractor, PRCB contract item Class "A" Concrete, Reinforced Concrete Box or Precast Reinforced Concrete Box (4' H x 8' W), measured by the number of lineal feet installed as specified, measured along the centerline of the box in place under this section.

31.11 Payment – The payment for the contract item Class "A" Concrete, Reinforced Concrete Box or Precast Reinforced Concrete Box (4' H x 8' W) shall include full compensation for all costs incurred under this section.

SECTION 32 – ELECTRICAL RELOCATION

32.1 Description - This section covers the contract items Trench or Bore, Backfill, Restoration and Shoring; Furnish and Install 1-Inch Conduit; Furnish and Install Service Box 10-Inch by 17-Inch; Furnish and Install 600V 3#8 CU Street Light Wiring Circuit Feet; and Remove and Salvage Street Light Standard.

32.2 General - This section covers the removal of three (3) light standards and providing new conduits to light standards north of Garfield Street as shown on the drawings. It should be noted that some material will be installed in areas that are not accessible by trucks; Contractor should refer to drawings and bid to include transportation to construction areas.

Contractor will be responsible to supply the appropriate staffing and qualifications to accommodate the level of work to be performed.

32.3 Trench or Bore, Backfill, Restoration and Shoring - The contract item Trench or Bore, Backfill, Restoration and Shoring covers the following:

1. Construction shall include cutting, removing, and disposal of pavement, excavation including any drilling, blasting, rock cutting, jackhammer work and removal of rock by any method, disposal of excess spoil, trench grading, backfilling, compaction and cleanup for installation of electric and other utility conduits as shown on drawings.

2. The contract item refers to those sections of trench that contain **only** RPU conduits.

3. The contract item shall include cutting, removing, disposal of, and restoration/replacement of surface improvements such as A/C and concrete paving, sidewalks, curb and gutter, sod/grass, landscaping, sprinkler systems, landscaping borders and other improvements.

4. A/C striping shall be replaced per City of Riverside, Public Works standards.

5. The contract item shall include temporary and/or permanent resurfacing (patching). All removed surface improvements shall become the property of the Contractor.

6. Disposal of removed improvements shall conform to all applicable federal, state and local laws, codes, ordinances and other requirements.

32.4 Furnish and Install 1-Inch Conduit - The contract item Furnish and Install 1-Inch Conduit covers the installation of 1-inch SCH40 conduit (duct feet).

The construction shall include furnishing and installing conduits (complete with spacers, bends, sweeps, couplings, adapters, pull ropes, caps, plugs, end bells, bushings, solvent cement, and other conduit fittings, conduit mandrelling and cleanup).

1. In the case of DB100 conduit, concrete encasement will be included in the cost of the contract item.

2. Where conduits enter structures, the gap between the structure and the surface of the conduit shall be grouted.

32.5 Furnish and Install Service Box 10-Inch by 17-Inch - The contract item Furnish and Install Service Box 10-Inch by 17-Inch covers the installation of Service Box 10-Inch by 17-Inch (P-1) which covers the following:

1. Construction shall include furnishing, placing, and backfilling around new pre-fabricated (precast) structures, complete with necking, covers, gaskets, inserts, ladders, grates, baffles and other accessories.

2. The contract item shall include excavation (including required drilling, rock cutting, jack-hammer work, and removal of rock, water or other materials), haul away and disposal of excess spoil, shoring, bedding, grading, placement and compaction of backfill, stenciling identification, and cleanup.

3. The contract item shall include furnishing, installing, relocation and removal of temporary plating, bridging, sheeting and shoring, or use of equivalent methods such as laying back of excavations for the protection of life and limb. Temporary plating, bridging, sheeting and shoring, or use of equivalent methods shall conform to all applicable federal, state and local laws, codes, ordinances and other requirements.

4. Contract item shall include cutting, removing, disposal of, and restoration/replacement of surface improvements such as A/C and concrete paving, sidewalks, curb and gutter, sod/grass, landscaping, sprinkler systems, landscaping borders and other improvements.

5. The contract item shall include temporary and/or permanent resurfacing (patching). All removed surface improvements shall become the property of the Contractor.

6. Disposal of removed improvements shall conform to all applicable federal, state and local laws, codes, ordinances and other requirements.

32.6 Furnish and Install 600V 3#8 CU Street Light Wiring Circuit Feet - The contract item Furnish and Install 600V 3#8 CU Street Light Wiring Circuit Feet shall include the furnishing and installing (pulling) of new 600V cable (3#8CU with colored jackets two (2) black and one (1) green) in new and existing conduits and substructures.

Construction shall also include installation of all required cable accessories (splices and connections), grounding, waterproofing, cable racking and labeling per City of Riverside Street Light Construction, Specification No. 2-6 which can be found online at www.riversideca.gov/utilities/pdf/ugs-elec/Spec2-611-06-14.pdf.

32.7 Remove and Salvage Street Light Standard - The contract item Remove and Salvage Street Light Standard shall include the labor to remove the street light facilities as shown on the plans and for the Contractor to deliver the light standard undamaged to the City Yard at 8095 Lincoln Avenue, Riverside. All salvaged facilities shall remain the property of the City.

32.8 Measurement – Measurement for payment of the contract items Trench or Bore, Backfill, Restoration and Shoring; Furnish and Install 1-Inch Conduit; and Furnish and Install 600V 3#8 CU Street Light Wiring Circuit Feet will be the number of lineal feet installed as shown on the drawings.

Measurement for payment of the contract items Furnish and Install Service Box 10-Inch by 17-Inch; and Remove and Salvage Street Light Standard will be the number of each type constructed or salvaged as specified.

Work beyond the limits established by the street lighting drawings, unless ordered in writing by the Engineer will not be measured for payment.

32.9 Payment - The contract prices paid for Trench or Bore, Backfill, Restoration and Shoring; Furnish and Install 1-Inch Conduit; Furnish and Install Service Box 10-Inch by 17-Inch; Furnish and Install 600V 3#8 CU Street Light Wiring Circuit Feet; and Remove and Salvage Street Light Standard 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	✓ Restricting vehicular access to established unpaved travel paths and parking lots can reduce stabilization requirements
	19-2	Limit vehicular travel to established unpaved roads (haul routes) and unpaved parking lots.	
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

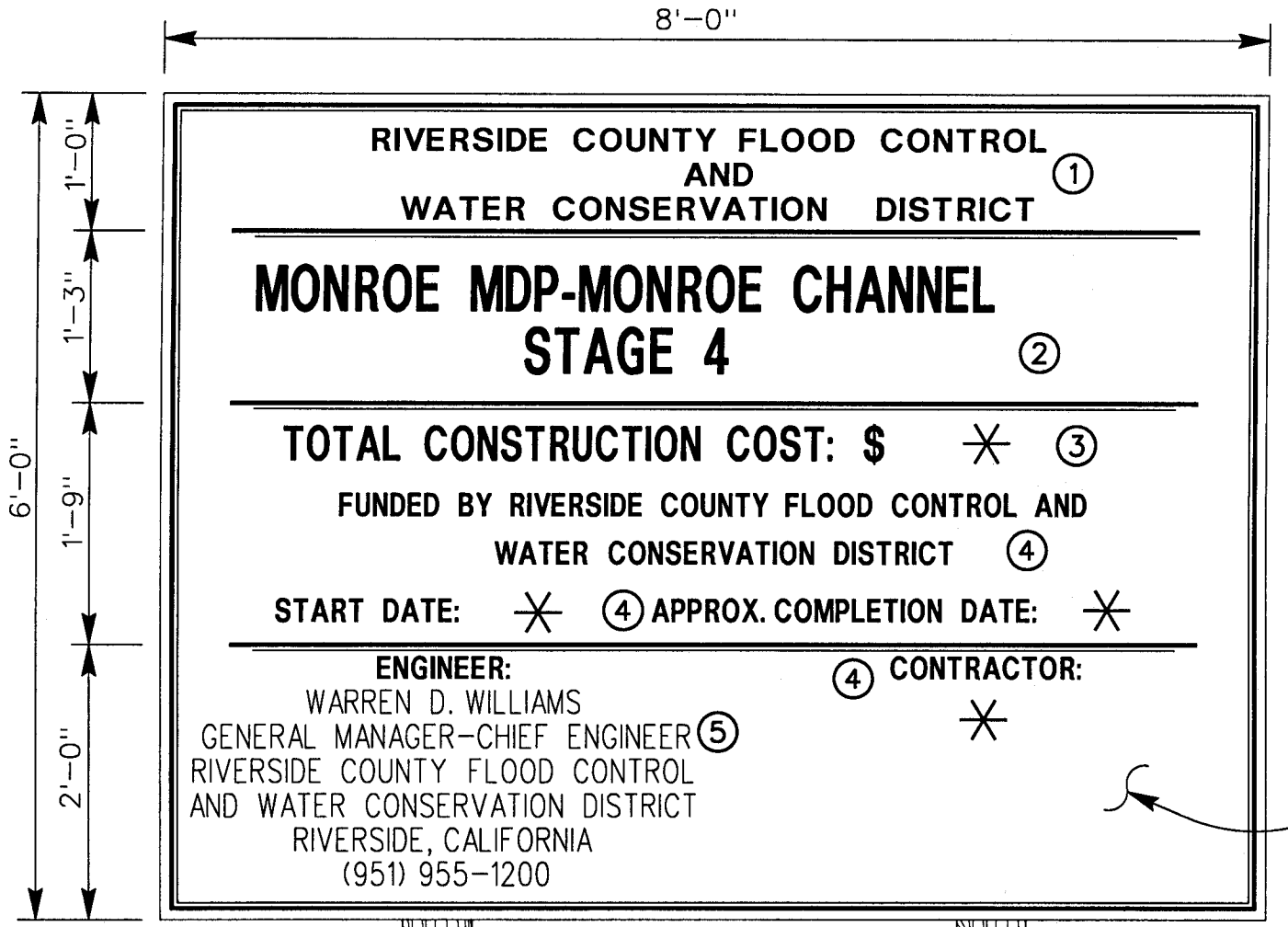
FUGITIVE DUST SOURCE CATEGORY	CONTROL MEASURES
Earth-moving	(1A) Cease all active operations; OR (2A) Apply water to soil not more than 15 minutes prior to moving such soil.
Disturbed surface areas	(0B) On the last day of active operations prior to a weekend, holiday, or any other period when active 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.

APPENDIX A

FIELD AND LABORATORY EXPLORATION AND TESTING

For our field exploration, five exploratory borings were excavated by means of a truck mounted rotary auger rig at the approximate locations shown on Figure A-8. Logs of the materials encountered were made on the site by a Staff Geologist. These are presented on Figures A-3 through A-7.

Representative undisturbed samples were obtained within our borings by driving a thin-walled steel penetration sampler with successive 30-inch drops of a 140-pound hammer. The number of blows required to achieve each six inches of penetration were recorded on our boring logs and used for estimating the relative consistencies of the subsoils. Two different samplers were used. The first sampler used was a Standard Penetration Sampler for which published correlations relating the number of hammer blows to the strength of the soil are available. The second sampler type was larger in diameter, carrying brass sample rings having inner diameters of 2.41 inches. Undisturbed samples were removed from the sampler and placed in moisture sealed containers in order to preserve the natural soil moisture content. Representative bulk soil samples were obtained from the auger cuttings. All samples were then transported to our laboratory for further observations and testing.

Representative bulk samples were obtained and returned to our laboratory for further testing and observations. The results of this testing are discussed and presented in Appendix B.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D2487-06)

PRIMARY DIVISIONS			GROUP SYMBOLS		SECONDARY DIVISIONS
COARSE GRAINED SOILS – MORE THAN HALF OF MATERIALS IS LARGER THAN #200 SIEVE SIZE	GRAVELS – MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN) 5% FINES	GW		WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS OR GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVEL WITH FINES	GM		SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC		CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS – MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE	CLEAN SANDS (LESS THAN) 5% FINES	SW		WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS OR GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM		SILTY SANDS, SAND-SILT MIXTURES
			SC		CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS – MORE THAN HALF OF MATERIALS IS SMALLER THAN #200 SIEVE SIZE	SILTS AND CLAYS – LIQUID LIMIT IS LESS THAN 50		ML		INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL		ORGANIC SILTS AND ORGANIC SILT-CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS – LIQUID LIMIT IS GREATER THAN 50		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, 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, MUCK AND OTHER HIGHLY ORGANIC SOILS
TYPICAL FORMATIONAL MATERIALS	SANDSTONES		SS		
	SILTSTONES		SH		
	CLAYSTONES		CS		
	LIMESTONES		LS		
	SHALE		SL		

CONSISTENCY CRITERIA BASES ON FIELD TESTS

RELATIVE DENSITY – COARSE – GRAIN SOIL

RELATIVE DENSITY	SPT * (# BLOWS/FT)	RELATIVE DENSITY (%)
VERY LOOSE	<4	0-15
LOOSE	4-10	15-35
MEDIUM DENSE	10-30	35-65
DENSE	30-50	65-85
VERY DENSE	>50	85-100

CONSISTENCY – FINE-GRAIN SOIL

CONSISTENCY	SPT* (# BLOWS/FT)	TORVANE UNDRAINED SHEAR STRENGTH (tsf)	POCKET ** PENETROMETER UNCONFINED COMPRESSIVE STRENGTH (tsf)
Very Soft	<2	<0.13	<0.25
Soft	2-4	0.13-0.25	0.25-0.5
Medium Stiff	4-8	0.25-0.5	0.5-1.0
Stiff	8-15	0.5-1.0	1.0-2.0
Very Stiff	15-30	1.0-2.0	2.0-4.0
Hard	>30	>2.0	>4.0

* NUMBER OF BLOWS OF 140 POUND HAMMER FALLING 30 INCHES TO DRIVE A 2 INCH O.D. (1 3/8 INCH I.D.) SPLIT BARREL SAMPLER (ASTM -1586 STANDARD PENETRATION TEST)

** UNCONFINED COMPRESSIVE STRENGTH IN TONS/SQ.FT. READ FROM POCKET PENETROMETER

MOISTURE CONTENT

DESCRIPTION	FIELD TEST
DRY	Absence of moisture, dusty, dry to the touch
MOIST	Damp but no visible water
WET	Visible free water, usually soil is below water table

CEMENTATION

DESCRIPTION	FIELD TEST
Weakly	Crumbled or breaks with handling or slight finger pressure
Moderately	Crumbles or breaks with considerable finger pressure
Strongly	Will not crumble or break with finger pressure

EXPLANATION OF LOGS

Figure A-2

LOG OF BORING B-01

Elevation:	778.0	Date(s) Drilled:	10/15/11	Logged by:	FWC
Drilling Method:	Rotary Auger			Hammer Type:	Auto-Trip
Drilling Rig:	Mobile B-61			Hammer Weight:	140 lb.
Boring Diameter:	8-inches			Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	USCS	Description	SAMPLES: DRIVE SAMPLE	SAMPLES: BULK SAMPLE	SAMPLES: SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
	SC	**ASPHALT CONCRETE** (3 inches)			BULK				
		CLAYEY SAND, fine to medium grained, red brown, moist, medium dense.							
			X		SS	3 3	10	103	
5	CL	**SANDY CLAY**, very fine, dark olive, moist, stiff.			BULK		16	118	
			X		SS	5 5	13	105	
			X		SS	10 15	10	117	
10	CL	**SANDY CLAY**, very fine to fine grained, olive, moist, hard, moderately cemented.			BULK				
			X		SS	19 21	16	108	
	CL	**SANDY CLAY**, very fine grained, tan, moist, very hard, strongly cemented, caliche.	X		SS	9	18	100	
15					BULK	40/4"			
	SC	**CLAYEY SAND**, very fine to fine grained, olive brown, moist, medium dense, moderately cemented.							
	SC SM	**SILTY, CLAYEY SAND**, fine to medium grained, mottled dark yellow brown, moist, medium dense.	X		SPT	3 5	16		
20	SM	**SILTY SAND,** fine to medium grained, mottled dark yellow brown, moist, medium dense.							
			X		SPT	7 8	15		
25	SC SM	**CLAYEY SAND**, fine to medium grained, dark yellow brown, moist, medium dense.							
		SILTY SAND, fine to medium grained, olive brown, wet, medium dense, interbedded with sand.	X		SPT	14 20	21		
		End of boring at 28 feet. Groundwater encountered at 26 feet. Mottling encountered at 19 feet.							

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Figure No. **A-3**

LOG OF BORING B-02

Elevation:	772.5 Date(s) Drilled: 10/15/11	Logged by:	FWC
Drilling Method:	Rotary Auger	Hammer Type:	Auto-Trip
Drilling Rig:	Mobile B-61	Hammer Weight:	140 lb.
Boring Diameter:	8-inches	Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	USCS	SAMPLES: DRIVE SAMPLE	SAMPLES: BULK SAMPLE	SAMPLES: SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
	SC			BULK				
		X		SS	3	10	107	
	CL			BULK	4	18	117	
5		X		SS	3 6	15	107	
	CL			BULK				
		X		SS	15 18	16	113	
10								
		X		SS	27	17	104	
	CL			BULK	27			
15		X		SS	16 21	22	101	
	SC							
	SM							
		X		SPT	7 12	14		
	SW							
20								
		X		SPT	11 15	12		
25								
		X		SS	15 30	15	114	
	SM							
30		X		SPT	16 22	27		
	SW							

ASPHALT CONCRETE over SUBBASE (8.5 inches over 2.5 silty sand)

CLAYEY SAND, very fine to medium grained, red brown, moist, medium dense.

CLAY with SAND, very fine to fine grained, red brown, moist, stiff, interbedded with sandy clay.

SANDY CLAY, very fine to fine grained, olive, moist, very hard, moderately cemented, with thin interbeds of clayey sand.

SANDY CLAY, very fine to fine grained, tan, moist, very hard, moderately cemented, caliche.

CLAYEY SAND, very fine to medium grained, olive brown, moist, dense.

SILTY SAND, very fine grained, olive, very moist to wet, medium dense.

SAND, fine to coarse grained with trace gravel, olive brown, wet, medium dense.

SILTY SAND, fine grained, olive brown, wet, dense.

SILTY SAND, fine to medium grained, brown, wet, dense.

End of boring at 31 feet. Groundwater encountered at 18 feet.

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Figure N

A-4

LOG OF BORING B-03

Elevation:	767.5	Date(s) Drilled:	10/15/11	Logged by:	FWC
Drilling Method:	Rotary Auger			Hammer Type:	Auto-Trip
Drilling Rig:	Mobile B-61			Hammer Weight:	140 lb.
Boring Diameter:	8-inches			Hammer Drop:	30-inches

DEPTH (ft)	GRAPHIC	USCS	SUMMARY OF SUBSURFACE CONDITIONS This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.	SAMPLES: DRIVE SAMPLE	SAMPLES: BULK SAMPLE	SAMPLES: SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
			ASPHALT CONCRETE, (5 inches)							
		CL	**SANDY CLAY**, very fine to fine grained, red brown, moist, hard.			BULK				
		SC	**CLAYEY SAND**, very fine to fine grained, red brown, moist, medium dense.			BULK				
				X		SS	11	14	119	
5		CL	**SANDY CLAY**, very fine to fine grained, olive brown, moist, hard, strongly cemented.			BULK	17			
		CL	**SANDY CLAY**, very fine to fine grained, tan, moist, very hard, moderately cemented, caliche.			BULK				
				X		SS	23	13	119	
		SC	**CLAYEY SAND**, very fine to fine grained, olive, moist, dense, moderately cemented.			BULK	32			
		SM	**SILTY SAND,** fine to medium grained, olive brown, slightly moist, medium dense, with thin interbeds of sand.			BULK				
10				X		SS	11	4	108	
							20			
		SC SM	**SILTY, CLAYEY SAND**, very fine to fine grained, olive, very moist, medium dense.	X		SS	11	24	102	
							18			
		SC	**CLAYEY SAND**, very fine to fine grained, olive, very moist, medium dense, small concretions.							
15				X		SS	5	25	104	
							8			
		CL	**SANDY CLAY**, very fine to fine grained, olive, wet, stiff, caliche, trace of concretions.							
20				X		SPT	5	20		
							6			
		SM	**SILTY SAND,** fine to medium grained, olive brown, wet, dense, interbedded with sand.							
25										
				X		SS	20	19	114	
							28			
				X		SPT	12	21		
							15			
			End of boring at 28 feet. Groundwater encountered at 13 feet.							

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Figure No.
A-5

LOG OF BORING B-04

Elevation:	763.0	Date(s) Drilled:	10/15/11	Logged by:	FWC
Drilling Method:	Rotary Auger			Hammer Type:	Auto-Trip
Drilling Rig:	Mobile B-61			Hammer Weight:	140 lb.
Boring Diameter:	8-inches			Hammer Drop:	30-inches

SUMMARY OF SUBSURFACE CONDITIONS

This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.

DEPTH (ft)	USCS	Description	SAMPLES: DRIVE SAMPLE	SAMPLES: BULK SAMPLE	SAMPLES: SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
		ASPHALT CONCRETE over SUBBASE (7 inches over 6 inches silty sand)							
	CL	**SANDY CLAY**, fine grained, red brown, moist, hard.		■	BULK				
			☒	■	SS	12 17	15	123	
5	CL	**SANDY CLAY**, very fine to fine grained, tan, moist, hard, moderately cemented, caliche.		■	BULK		19	113	
			☒	■	SS	14 16	18	105	
	SM SC	**SILTY SAND,** fine to medium grained, olive, moist, medium dense.			BULK				
10	SM	**SILTY, CLAYEY SAND**, fine to medium grained, light olive, moist, dense, with thin interbeds of sandy clay.	☒	■	SS	15 21	21	102	
	SC	**CLAYEY SAND**, fine to medium grained, light blue-gray, very moist to wet, medium dense.		■	BULK				
			☒	■	SS	10 21	27	93	
15									
			☒	■	SS	13 16	20	106	
	CL	**SANDY CLAY**, very fine to fine grained, light olive, very moist to wet, stiff.							
	SW	**SAND,** fine to very coarse grained, olive, wet, medium dense.							
20			☒		SPT	9 15	15		
25			☒		SPT	17 26	17		
		End of boring at 30 feet. Groundwater encountered at 13 feet.	☒		SPT	12 17			

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Figure No.
A-6

LOG OF BORING B-05

Elevation:	761.0	Date(s) Drilled:	10/15/11	Logged by:	FWC
Drilling Method:	Rotary Auger			Hammer Type:	Auto-Trip
Drilling Rig:	Mobile B-61			Hammer Weight:	140 lb.
Boring Diameter:	8-inches			Hammer Drop:	30-inches

DEPTH (ft)	GRAPHIC	USCS	SUMMARY OF SUBSURFACE CONDITIONS This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered and is representative of interpretations made during drilling. Contrasting data derived from laboratory analysis may not be reflected in these representations.	SAMPLES: DRIVE SAMPLE	SAMPLES: BULK SAMPLE	SAMPLES: SAMPLE TYPE	BLOWS/6"	MOISTURE (%)	DRY UNIT WT. (pcf)	RELATIVE COMPACTION (%)
			ASPHALT CONCRETE over SUBBASE (SILTY SAND) (5.5 inches OVER 2.5 inches)			BULK				
		CL	**SANDY CLAY**, very fine to fine grained, red brown, moist, hard, moderately cemented.			SS	14	14	117	
		CL	**SANDY CLAY**, very fine to fine grained, light gray, moist, stiff, moderately cemented, caliche.			BULK	32			
5						SS	9	22	104	
		SC	**CLAYEY SAND**, very fine to fine grained, olive, moist, medium dense, trace of caliche.			BULK	13			
		SM	**SILTY SAND,** fine to medium grained, olive, moist, dense, with thin interbeds of sandy clay.			SS	16 20	29	98	
10		SC SM	**SILTY, CLAYEY SAND**, very fine to fine grained, olive, very moist to wet, medium dense, with thin interbeds of sand.			BULK				
						SS	15 18	23	105	
15		SC	**CLAYEY SAND**, very fine to fine grained, olive, wet, medium dense, with thin interbeds of sand.			SS	11 21	15	119	
20		SW	**SAND,** fine to coarse grained with gravel, olive brown, wet, medium dense.			SPT	9 16	25		
25						SS	18 26	14	124	
						SPT	12 15	15		
			End of boring at 27 feet. Groundwater encountered at 11 feet.							

INLAND FOUNDATION ENGINEERING, INC.

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Monroe Street
Riverside, CA
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Figure No. A-7

SITE PLAN

Riverside County Flood Control and Water Conseration District
Monroe Storm Drain, Stage 4, Monroe Street, Riverside, California

● - Indicates Approximate Boring Location

INLAND FOUNDATION ENGINEERING, INC.
1310 South Santa Fe Avenue
San Jacinto, California
(951) 654-1555 FAX (951) 654-0551

DRAWN BY: LES	JOB NO.: R206-013
SCALE: 1"=200'	DATE: November 2011