Reattach foam barriers and rigid plastic barriers that become detached or dislodged from the pavement.

Repair split or torn rigid plastic barriers with 1.57-mm galvanized steel wire or UV stabilized cable ties that are from 125-mm to 175-mm in length.

For sediment filter bags without metal frames, empty by placing one inch steel reinforcing bars through the lifting loops and then lift the filled bag from the drainage inlet. For sediment filter bags with metal frames, empty by lifting the metal frame from the drainage inlet. Rinse before replacing in the drainage inlet. When rinsing the sediment filter bags, do not allow the rinse water to enter a drain inlet or waterway.

Repair temporary drainage inlet protection within 24 hours of discovering damage unless the Engineer approves a longer period.

If the Contractor's vehicles, equipment, or activities disturb or displace temporary drainage inlet protection, repair temporary drainage inlet protection at the Contractor's expense.

The County does not pay maintenance costs for cleanup, repair, removal, disposal, or replacement due to improper installation or the Contractor's negligence.

REMOVAL

When the Engineer determines that the temporary drainage inlet protection is not required, it must be removed and disposed of under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary drainage inlet protection must be backfilled and repaired under Section 15-1.02, "Preservation of Property" of the Standard Specifications.

MEASUREMENT AND PAYMENT

Quantities of temporary drainage inlet protection will be determined from actual count in place. The protection will be measured one time only and no additional measurement will be recognized.

The contract unit price paid for Temporary Drainage Inlet Protection includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the temporary drainage inlet protection, complete in place, including removal of materials, cleanup and disposal of retained sediment and debris, and backfilling and repairing holes, depressions and other ground disturbance, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

No additional compensation will be made if the temporary drainage inlet protection is relocated during the course of construction.

10-1.35 COOPERATION:

It is anticipated that work by another Contractor may be in progress adjacent to the limits of this project during progress of the work on this contract. The following table lists contracts anticipated to be in progress during this contract.

Contract No.	Co-Rte-KP	Location	Type of Work
08-455704	Riv-10-52.5/54.1	at Indian Avenue	Reconstruct interchange
08-455804	Riv-10-57.4/58.9	at Palm Drive/Gene Autry Trail	Reconstruct interchange
08-456004	Riv-10-68.2/70.7	at Ramon Road	Reconstruct interchange

Comply with Section 7-1.14, "Cooperation" of the Standard Specifications.

10-1.36 PROGRESS SCHEDULE (CRITICAL PATH METHOD):

GENERAL

Summary

Critical path method (CPM) progress schedules are required for this project. Whenever the term "schedule" is used in this section, it means CPM progress schedule.

The provisions in Section 8-1.04, "Progress Schedule" of the Standard Specifications do not apply.

Definitions

The following definitions apply to this section:

Activity: A task, event or other project element on a schedule that contributes to completing the project. Activities have a description, start date, finish date, duration and one or more logic ties.

Baseline Schedule: The initial schedule showing the original work plan beginning on the date of contract approval. This schedule shows no completed work to date and no negative float or negative lag to any activity.

Contract Completion Date: The current extended date for completion of the contract shown on the weekly statement of working days furnished by the Engineer as specified in Section 8-1.06, "Time of Completion" of the Standard Specifications.

Critical Path: The longest continuous chain of activities for the project that has the least amount of total float of all chains. In general, a delay on the critical path will extend the scheduled completion date.

Critical Path Method (CPM): A network based planning technique using activity durations and the relationships between activities to mathematically calculate a schedule for the entire project.

Data Date: The day after the date through which a schedule is current. Everything occurring earlier than the data date is "as-built" and everything on or after the data date is "planned".

Early Completion Time: The difference in time between an early scheduled completion date and the contract completion date.

Float: The difference between the earliest and latest allowable start or finish times for an activity.

Milestone: An event activity that has zero duration and is typically used to represent the beginning or end of a certain stage of the project.

Narrative Report: A document submitted with each schedule that discusses topics related to project progress and scheduling.

Near Critical Path: A chain of activities with total float exceeding that of the critical path but having no more than 10 working days of total float.

Scheduled Completion Date: The planned project finish date shown on the current accepted schedule.

State Owned Float Activity: The activity documenting time saved on the critical path by actions of the State. It is the last activity prior to the scheduled completion date.

Time Impact Analysis: A schedule and narrative report developed specifically to demonstrate what effect a proposed change or delay has on the current scheduled completion date.

Time-Scaled Network Diagram: A graphic depiction of a CPM schedule comprised of activity bars with relationships for each activity represented by arrows. The tail of each arrow connects to the activity bar for the predecessor and points to the successor.

Total Float: The amount of time that an activity or chain of activities can be delayed before extending the scheduled completion date.

Updated Schedule: A current schedule developed from the baseline or subsequent schedule through regular monthly review to incorporate as-built progress and any planned changes.

Submittals

Submit to the Engineer baseline, monthly updated, and final updated schedules, each consistent in all respects with the time and order of work requirements of the contract. Work must be executed in the sequence indicated on the current accepted schedule.

Schedules must show the order in which you propose to prosecute the work with logical links between time-scaled work activities and calculations made using the critical path method to determine the controlling activities. The Contractor is responsible for assuring that all activity sequences are logical and that each schedule shows a coordinated plan for complete performance of the work.

Produce schedules using computer software and submit compatible software for the Engineer's exclusive possession and use. Submit network diagrams and schedule data as parts of each schedule submittal.

Schedule activities must include the following:

A. Project characteristics, salient features, or interfaces, including those with outside entities, that could affect time of completion.
B. Project start date, scheduled completion date, and other milestones.
C. Work performed by the Contractor, the subcontractors, and suppliers.
D. Submittal development, delivery, review, and approval, including those from the Contractor, the subcontractors, and suppliers.
E. Procurement, delivery, installation, and testing of materials, plants, and equipment.
F. Testing and settlement periods.
G. Utility notification and relocation.
H. Erection and removal of falsework and shoring.
I. Major traffic stage switches.
J. Finishing roadway and final cleanup.
K. State-owned float as the predecessor activity to the scheduled completion date.

Schedules must have not less than 50 and not more than 500 activities, unless otherwise authorized by the Engineer. The number of activities must be sufficient to assure adequate planning of the project, to permit monitoring and evaluation of progress, and to do an analysis of time impacts.

Schedule activities must include the following:

A. A clear and legible description.
B. Start and finish dates.
C. A duration of not less than one working day, except for event activities, and not more than 20 working days, unless otherwise authorized by the Engineer.
D. At least one predecessor and one successor activity, except for project start and finish milestones.
E. Required constraints. Constraints other than those required by the Special Provisions may be included only if authorized by the Engineer.

F. Codes for responsibility, stage, work shifts, location, and contract pay item numbers.

Contractor may show early completion time on any schedule provided that the requirements of the contract are met. Early completion time is considered a resource for your exclusive use. Contractor may increase early completion time by improving production, reallocating resources to be more efficient, performing sequential activities concurrently, or by completing activities earlier than planned. Contractor may also submit for approval a cost reduction incentive proposal as specified in Section 5-1.14, "Cost Reduction Incentive" of the Standard Specifications that will reduce time of construction.

Contractor may show a scheduled completion date that is later than the contract completion date on an update schedule, after the baseline schedule is accepted. Provide an explanation for a late scheduled completion date in the narrative report that is included with the schedule.

State-owned float is considered a resource for the exclusive use of the State. The Engineer may accrue State-owned float by the early completion of review of any type of required submittal when it saves time on the critical path. Prepare a time impact analysis, when requested by the Engineer, to determine the effect of the action as specified in "Time Impact Analysis". The Engineer documents State-owned float by directing the Contractor to update the State-owned float activity on the next updated schedule. Include a log of the action on the State-owned float activity and include a discussion of the action in the narrative report. The Engineer may use State-owned float to mitigate past, present, or future State delays by offsetting potential time extensions for contract change orders.

The Engineer may adjust contract working days for ordered changes that affect the scheduled completion date as specified in Section 4-1.03, "Changes" of the Standard Specifications. Prepare a time impact analysis to determine the effect of the change as specified in "Time Impact Analysis" and include the impacts acceptable to the Engineer in the next updated schedule. Changes that do not affect the controlling operation on the critical path will not be considered as the basis for a time adjustment. Changes that do affect the controlling operation on the critical path will be considered by the Engineer in decreasing time or granting an extension of time for completion of the contract. Time extensions will only be granted if the total float is absorbed and the scheduled completion date is delayed one or more working days because of the ordered change.

The Engineer's review and acceptance of schedules does not waive any contract requirements and does not relieve the Contractor of any obligation or responsibility for submitting complete and accurate information. Correct rejected schedules and resubmit corrected schedules to the Engineer within 7 days of notification by the Engineer, at which time a new review period of 7 days will begin.

Errors or omissions on schedules do not relieve the Contractor from finishing all work within the time limit specified for completion of the contract. If, after a schedule has been accepted by the Engineer, either the Contractor or the Engineer discover that

any aspect of the schedule has an error or omission, the Contractor must correct it on the next updated schedule.

Computer Software

Submit to the Engineer for review a description of proposed schedule software to be used. After the Engineer accepts the proposed software, submit schedule software and all original software instruction manuals. All software must be compatible with the current version of the Windows operating system in use by the Engineer. The schedule software must include:

A. Latest version of Primavera SureTrak Project Manager for Windows, or equivalent.
B. Latest version of schedule-comparing HST SureChange, or equivalent.

If a schedule software equivalent to SureTrak is proposed, it must be capable of generating files that can be imported into SureTrak. The schedule-comparing software must be compatible with schedule software submitted and must be able to compare two schedules and provide reports of changes in activity ID, activity description, constraints, calendar assignments, durations, and logic ties.

The schedule software and schedule-comparing software will be returned to the Contractor before the final estimate. The Department will compensate the Contractor as specified in Section 4-1.03, "Extra Work" of the Standard Specifications for replacement of software or manuals damaged, lost, or stolen after delivery to the Engineer.

Instruct the Engineer in the use of the software and provide software support until the contract is accepted. Within 15 days of contract approval, provide a commercial 8-hour training session for 2 Department employees in the use of the software at a location acceptable to the Engineer. It is recommended that the Contractor also send at least 2 employees to the same training session to facilitate development of similar knowledge and skills in the use of the software. If schedule software other than SureTrak is submitted, then the training session must be a total of 16-hours for each Department employee.

Network Diagrams, reports, ansd Data

Include the following with each schedule submittal:

A. Two sets of originally plotted, time-scaled network diagrams.
B. Two copies of a narrative report.
C. One read-only compact disk or floppy diskette containing the schedule data.

The time-scaled network diagrams must conform to the following:

A. Show a continuous flow of information from left to right.
B. Be based on early start and early finish dates of activities.
C. Clearly show the primary paths of criticality using graphical presentation.

D. Be prepared on 860-mm x 1120-mm (34" x 44").
E. Include a title block and a timeline on each page.

The narrative report must be organized in the following sequence with all applicable documents included:

A. Transmittal letter.
B. Work completed during the period.
C. Identification of unusual conditions or restrictions regarding labor, equipment or material; including multiple shifts, 6-day work weeks, specified overtime or work at times other than regular days or hours.
D. Description of the current critical path.
E. Changes to the critical path and scheduled completion date since the last schedule submittal.
F. Description of problem areas.
G. Current and anticipated delays:

    1. Cause of delay.
    2. Impact of delay on other activities, milestones, and completion dates.
    3. Corrective action and schedule adjustments to correct the delay.

H. Pending items and status thereof:

    1. Permits.
    2. Change orders.
    3. Time adjustments.
    4. Noncompliance notices.

I. Reasons for an early or late scheduled completion date in comparison to the contract completion date.

Schedule submittals will only be considered complete when all documents and data have been submitted as described above.

Preconstruction Scheduling Conference

Schedule a preconstruction scheduling conference with the Contractor's project manager and the Engineer within 15 days after contract approval. The Engineer will conduct the meeting and review the requirements of this section with the Contractor.

Submit a general time-scaled logic diagram displaying the major activities and sequence of planned operations and be prepared to discuss the proposed work plan and schedule methodology that comply with the requirements of this section. If the Contractor proposes deviations to the construction staging, then the general time-scaled logic diagram must also display the deviations and resulting time impacts. Be prepared to discuss the proposal.

At this meeting, also submit the alphanumeric coding structure and activity identification system for labeling work activities. To easily identify relationships, each activity description must indicate its associated scope or location of work by including such terms as quantity of material, type of work, bridge number, station to station location, side of highway (such as left, right, northbound, southbound), lane number, shoulder, ramp name, ramp line descriptor, or mainline.

The Engineer reviews the logic diagram, coding structure, and activity identification system, and provide any required baseline schedule changes to the Contractor for implementation.

Baseline Schedule

Beginning the week following the preconstruction scheduling conference, meet with the Engineer weekly to discuss schedule development and resolve schedule issues until the baseline schedule is accepted.

Submit to the Engineer a baseline schedule within 20 days of approval of the contract. Allow 20 days for the Engineer's review after the baseline schedule and all support data are submitted. In addition, the baseline schedule submittal is not considered complete until the computer software is delivered and installed for use in review of the schedule.

The baseline schedule must include the entire scope of work and how the Contractor plans to complete all work contemplated. The baseline schedule must show the activities that define the critical path. Multiple critical paths and near-critical paths must be kept to a minimum. A total of not more than 50 percent of the baseline schedule activities must be critical or near critical, unless otherwise authorized by the Engineer.

The baseline schedule must not extend beyond the number of contract working days. The baseline schedule must have a data date of contract approval. If the Contractor starts work before contract approval, the baseline schedule must have a data date of the 1st day the Contractor performed work at the job site.

If the Contractor submits an early completion baseline schedule that shows contract completion in less than 85 percent of the contract working days, the baseline schedule must be supplemented with resource allocations for every task activity and include time-scaled resource histograms. The resource allocations must be shown to a level of detail that facilitates report generation based on labor crafts and equipment classes for the Contractor and the subcontractors. Use average composite crews to display the labor loading of on-site construction activities. Optimize and level labor to reflect a reasonable plan for accomplishing the work of the contract and to assure that resources are not duplicated in concurrent activities. The time-scaled resource histograms must show labor crafts and equipment classes to be used. The Engineer may review the baseline schedule activity resource allocations using Means Productivity Standards or equivalent to determine if the schedule is practicable.

Updated Schedule

Submit an updated schedule and meet with the Engineer to review contract progress, on or before the 1st day of each month, beginning one month after the baseline schedule is accepted. Allow 15 days for the Engineer's review after the updated schedule and all support data are submitted, except that the review period will not start until the previous month's required schedule is accepted. Updated schedules that are not accepted or rejected within the review period are considered accepted by the Engineer.

The updated schedule must have a data date of the 21st day of the month or other date established by the Engineer. The updated schedule must show the status of work actually completed to date and the work yet to be performed as planned. Actual activity start dates, percent complete, and finish dates must be shown as applicable. Durations for work that has been completed must be shown on the updated schedule as the work actually occurred, including Engineer submittal review and the Contractor's resubmittal times.

The Contractor may include modifications such as adding or deleting activities or changing activity constraints, durations, or logic that do not (1) alter the critical path(s) or near critical path(s) or (2) extend the scheduled completion date compared to that shown on the current accepted schedule. Justify in writing the reasons for any changes to planned work. If any proposed changes in planned work will result in (1) or (2) above, then submit a time impact analysis as specified in this section.

Time Impact Analysis

Submit a written time impact analysis (TIA) to the Engineer with each request for adjustment of contract time, or when the Contractor or the Engineer considers that an approved or anticipated change may impact the critical path or contract progress.

The TIA must illustrate the impacts of each change or delay on the current scheduled completion date or internal milestone, as appropriate. The analysis must use the accepted schedule that has a data date closest to and before the event. If the Engineer determines that the accepted schedule used does not appropriately represent the conditions before the event, the accepted schedule must be updated to the day before the event being analyzed. The TIA must include an impact schedule developed from incorporating the event into the accepted schedule by adding or deleting activities, or by changing durations or logic of existing activities. If the impact schedule shows that incorporating the event modifies the critical path and scheduled completion date of the accepted schedule, the difference between scheduled completion dates of the two schedules must be equal to the adjustment of contract time. The Engineer may construct and use an appropriate project schedule or other recognized method to determine adjustments in contract time until the Contractor provide the TIA.

Submit 2 copies of the Contractor's TIA within 20 days of receiving a written request for a TIA from the Engineer. Allow the Engineer 15 days after receipt to review the submitted TIA. All approved TIA schedule changes must be shown on the next updated schedule.

If the Contractor's TIA submittal is rejected, meet with the Engineer to discuss and resolve issues related to the TIA. If agreement is not reached, the Contractor are allowed 15 days from the meeting with the Engineer to give notice as specified in Section 9-1.04, "Notice of Potential Claim" of the Standard Specifications. Only show actual as-built work, not unapproved changes related to the TIA, in subsequent updated schedules. If agreement is reached at a later date, approved TIA schedule changes must be shown on the next updated schedule. The Engineer withholds remaining payment on the schedule contract item if a TIA is requested and not submitted within 20 days. The schedule item payment resumes on the next estimate after the requested TIA is submitted. No other contract payment is retained regarding TIA submittals.

Final Updated Schedule

Submit a final update, as-built schedule with actual start and finish dates for the activities, within 30 days after completion of contract work. Provide a written certificate with this submittal signed by the Contractor's project manager or an officer of the company stating, "To my knowledge and belief, the enclosed final update schedule reflects the actual start and finish dates of the actual activities for the project contained herein". An officer of the company may delegate in writing the authority to sign the certificate to a responsible manager.

PAYMENT

The contract lump sum price paid for Progress Schedule (Critical Path Method) shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, including computer software, and for doing all the work involved in preparing, furnishing, and updating schedules, and instructing and assisting the Engineer in the use of computer software, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Payments for the Progress Schedule (Critical Path Method) contract item will be made progressively as follows:

A. A total of 25 percent of the item amount or a total of 25 percent of the amount listed for Progress Schedule (Critical Path Method) in "Payments" of these Special Provisions, whichever is less, will be paid upon achieving all of the following:

    1. Completion of 5 percent of all contract item work.
    2. Acceptance of all schedules and approval of all TIAs required to the time when 5 percent of all contract item work is complete.
    3. Delivery of schedule software to the Engineer.
    4. Completion of required schedule software training.

B. A total of 50 percent of the item amount or a total of 50 percent of the amount listed for Progress Schedule (Critical Path Method) in "Payments" of these Special Provisions, whichever is less, will be paid upon completion of 25 percent of all contract item work and acceptance of all schedules and

approval of all TIAs required to the time when 25 percent of all contract item work is complete.

C. A total of 75 percent of the item amount or a total of 75 percent of the amount listed for Progress Schedule (Critical Path Method) in "Payments" of these Special Provisions, whichever is less, will be paid upon completion of 50 percent of all contract item work and acceptance of all schedules and approval of all TIAs required to the time when 50 percent of all contract item work is complete.

D. A total of 100 percent of the item amount or a total of 100 percent of the amount listed for Progress Schedule (Critical Path Method) in "Payments" of these Special Provisions, whichever is less, will be paid upon completion of all contract item work, acceptance of all schedules and approval of all TIAs required to the time when all contract item work is complete, and submittal of the certified final update schedule.

If the Contractor fails to complete any of the work or provide any of the schedules required by this section, the Engineer makes an adjustment in compensation as specified in Section 4-1.03C, "Changes in Character of Work" of the Standard Specifications for the work not performed. Adjustments in compensation for schedules will not be made for any increased or decreased work ordered by the Engineer in submitting schedules.

10-1.37 DUST CONTROL:

Dust control shall conform to the provisions in Section 10, "Dust Control" of the Standard Specifications and these Special Provisions.

Attention is directed to "Water Conservation" of these Special Provisions regarding the use of a dust palliative to control dust.

In addition, the project is in an area subject to the provisions of South Coast Air Quality Management District (SCAQMD) Rule 403.1, *Wind Entrainment of Fugitive Dust, Section (d).* Details of SCAQMD Rule 403.1 can be found at: http://www.aqmd.gov/rules/reg/reg04/r403-1.pdf.

Furthermore, the Contractor shall not: drive on other than existing roads when outside the project areas or drive at a speed in excess of 30 km/h on unpaved roads.

The wind erosion/blowsand control plan required under SCAQMD Rule 403.1 shall be approved by the Engineer prior to performing any work to which Rule 403.1 applies.

Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be paid for on a lump sum basis for Dust Abatement and no additional compensation will be allowed therefor.

10-1.38 CONSTRUCTION AREA TRAFFIC CONTROL DEVICES:

Flagging, signs, and temporary traffic control devices furnished, installed, maintained, and removed when no longer required shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications and these Special Provisions.

Category 1 temporary traffic control devices are defined as small and lightweight (less than 45 kg) devices. These devices shall be certified as crashworthy by crash testing, crash testing of similar devices, or years of demonstrable safe performance. Category 1 temporary traffic control devices include traffic cones, plastic drums, portable delineators, and channelizers.

If requested by the Engineer, the Contractor shall provide written self-certification for crashworthiness of Category 1 temporary traffic control devices at least 5 days before beginning any work using the devices or within 2 days after the request if the devices are already in use. Self-certification shall be provided by the manufacturer or Contractor and shall include the following:

A. Date,
B. Federal Aid number (if applicable),
C. Contract number, district, county, route and kilometer post of project limits,
D. Company name of certifying vendor, street address, city, state and zip code,
E. Printed name, signature and title of certifying person; and
F. Category 1 temporary traffic control devices that will be used on the project.

The Contractor may obtain a standard form for self-certification from the Engineer.

Category 2 temporary traffic control devices are defined as small and lightweight (less than 45 kg) devices that are not expected to produce significant vehicular velocity change, but may cause potential harm to impacting vehicles. Category 2 temporary traffic control devices include barricades and portable sign supports.

Category 2 temporary traffic control devices shall be on the Federal Highway Administration's (FHWA) list of Acceptable Crashworthy Category 2 Hardware for Work Zones. This list is maintained by FHWA and can be located at: http://safety.fhwa.dot.gov/roadway_dept/road_hardware/listing.cfm?code=workzone

The Department also maintains this list at: http://www.dot.ca.gov/hq/traffops/signtech/signdel/pdf/Category2.pdf

Category 2 temporary traffic control devices that have not received FHWA acceptance shall not be used. Category 2 temporary traffic control devices in use that have received FHWA acceptance shall be labeled with the FHWA acceptance letter number and the name of the manufacturer. The label shall be readable and permanently affixed by the manufacturer. Category 2 temporary traffic control devices without a label shall not be used.

If requested by the Engineer, the Contractor shall provide a written list of Category 2 temporary traffic control devices to be used on the project at least 5 days before beginning any work using the devices or within 2 days after the request if the devices are already in use.

Category 3 temporary traffic control devices consist of temporary traffic-handling equipment and devices that weigh 45 kg or more and are expected to produce significant vehicular velocity change to impacting vehicles. Temporary traffic-handling equipment and devices include crash cushions, truck-mounted attenuators, temporary railing, temporary barrier, and end treatments for temporary railing and barrier.

Type III barricades may be used as sign supports if the barricades have been successfully crash tested, meeting the NCHRP Report 350 criteria, as one unit with a construction area sign attached.

Category 3 temporary traffic control devices shall be shown on the plans or on the Department's Highway Safety Features list. This list is maintained by the Division of Engineering Services and can be found at: http://www.dot.ca.gov/hq/esc/approved_products_list/HighwaySafe.htm

Category 3 temporary traffic control devices that are not shown on the plans or not listed on the Department's Highway Safety Features list shall not be used.

Full compensation for providing self-certification for crashworthiness of Category 1 temporary traffic control devices and for providing a list of Category 2 temporary traffic control devices used on the project shall be considered as included in the prices paid for the various items of work requiring the use of the Category 1 or Category 2 temporary traffic control devices and no additional compensation will be allowed therefor.

10-1.39 NOISE CONTROL:

This section applies to equipment on the project or associated with the project, including trucks, transit mixers, stationary equipment, and transient equipment.

Do not operate construction equipment or run the equipment engines from 7:00 p.m. to 7:00 a.m. or on Sundays except you may operate equipment within the project limits during these hours to:

A. Service traffic control facilities.
B. Service construction equipment.

10-1.40 CONSTRUCTION AREA SIGNS:

Construction area signs for temporary traffic control shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications and these Special Provisions.

Attention is directed to "Furnish Sign" of these Special Provisions.

Attention is directed to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions. Type II retroreflective sheeting shall not be used on construction area sign panels. Type III, IV, VII, VIII, or IX retroreflective sheeting shall be used for stationary mounted construction area sign panels.

Attention is directed to "Construction Project Information Signs" of these Special Provisions regarding the number and type of construction project information signs to be furnished, erected, maintained, and removed and disposed of.

Unless otherwise shown on the plans or specified in these Special Provisions, the color of construction area warning and guide signs shall have black legend and border on orange background, except W10-1 or W47(CA) (Highway-Rail Grade Crossing Advance Warning) sign shall have black legend and border on yellow background.

Orange background on construction area signs shall be fluorescent orange.

Repair to construction area sign panels will not be allowed, except when approved by the Engineer. At nighttime under vehicular headlight illumination, sign panels that exhibit irregular luminance, shadowing or dark blotches shall be immediately replaced at the Contractor's expense.

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 business days, but not more than 14 days, prior to commencing excavation for construction area sign posts. The regional notification centers include, but are not limited to, the following:

Notification Center	Telephone Number
Underground Service Alert	811

Excavations required to install construction area signs shall be performed by hand methods without the use of power equipment, except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes. The post hole diameter, if backfilled with portland cement concrete, shall be at least 100-mm greater than the longer dimension of the post cross-section.

Construction area signs placed within 4.6 m from the edge of the travel way shall be mounted on stationary mounted sign supports as specified in "Construction Area Traffic Control Devices" of these Special Provisions.

The Contractor shall maintain accurate information on construction area signs. Signs that are no longer required shall be immediately covered or removed. Signs that convey inaccurate information shall be immediately replaced or the information shall be corrected. Covers shall be replaced when they no longer cover the signs properly. The Contractor shall immediately restore to the original position and location any sign that is displaced or overturned, from any cause, during the progress of work.

Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be considered as included in the lump sum price paid for Construction Area Signs and no additional compensation will be allowed therefor.

10-1.41 MAINTAINING TRAFFIC:

Maintaining traffic shall conform to the provisions in Sections 7-1.08, "Public Convenience" Section 7-1.09, "Public Safety" and Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications, "Public Safety" of these Special Provisions and these Special Provisions.

Closure is defined as the closure of a traffic lane or lanes, including shoulder, ramp or connector lanes, within a single traffic control system.

Closures shall conform to the provisions in "Traffic Control System for Lane Closure" of these Special Provisions.

At locations where falsework pavement lighting through falsework are designated, falsework lighting shall be installed in conformance with the provisions in Section 86-6.11, "Falsework Lighting" of the Standard Specifications.

Openings shall be provided through bridge falsework for the use of public traffic at each location where falsework is constructed over the streets or routes listed in the following table. The type, minimum width, height, and number of openings at each location, and the location and maximum spacing of falsework lighting, if required for each opening, shall conform to the requirements in the table. The width of vehicular openings shall be the clear width between temporary railings or other protective work. The spacing shown for falsework pavement lighting is the maximum distance center to center in meters between fixtures.

Date Palm Drive Overcrossing on Rout 10
Br. No. 56-0560

	Number	Width	Height
Vehicle Openings	1 EB 1 WB	13.8 13.8	4.6 4.6
	Location		Spacing
Falsework Pavement Lighting	R and L		9

(Width and Height in meters)
(R = Right side of traffic. L = Left side of traffic)
(C = Centered overhead)

The exact location of openings will be determined by the Engineer.

Closures are only allowed during the hours shown in the lane requirement charts included in this section "Maintaining Traffic", except for work required under Section 7-1.08, "Public Convenience" and Section 7-1.09, "Public Safety".

The full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress.

Under one-way reversing traffic control operations, public traffic may be stopped in one direction for periods not to exceed 10 minutes.

Unless approved by the Engineer, the maximum length of a single stationary lane closure shall be 1 km.

Unless approved by the Engineer, not more than 2 separate stationary lane closures will be allowed at one time. Concurrent stationary closures shall be spaced no closer than 1 km apart.

Local authorities shall be notified at least 5 business days before work begins. The Contractor shall cooperate with local authorities to handle traffic through the work area and shall make arrangements to keep the work area clear of parked vehicles.

Ramps adjacent to the closed freeway lane may be closed.

SC6-3(CA) (RAMP CLOSED) sign shall be used to inform motorists of the temporary closing of a connector, entrance ramp or exit ramp for one business day. SC6-4(CA) (RAMP CLOSED) sign shall be used to inform motorists of the temporary closing of a connector, entrance ramp or exit ramp for more than one business day.

The SC6-3(CA) or SC6-4(CA) signs shall be installed at least 7 days before closing the connector or ramp, but not more than 14 days before the connector or ramp closure. The Contractor shall notify the Engineer at least 2 business days before installing the SC6-3(CA) or SC6-4(CA) signs. The SC6-3(CA) or SC6-4(CA) signs shall be stationary mounted at locations shown on the plans and as directed by the Engineer.

Accurate information shall be maintained on the SC6-3(CA) or SC6-4(CA) signs. The SC6-3(CA) or SC6-4(CA) signs, when no longer required, shall be immediately covered or removed.

During blasting, hauling, slide removal excavation operations, the road may be closed and public traffic stopped for periods not to exceed 10 minutes. After one closure is made, accumulated traffic shall pass through the work before another closure is allowed.

Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders including sections closed to public traffic.

When work vehicles or equipment are parked on the shoulder within 1.8 m of a traffic lane, the shoulder area shall be closed with fluorescent orange traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 7.5 m intervals to a point not less than 7.5 m past the last vehicle or piece of equipment. A minimum of 9 traffic cones or portable delineators shall be used for the taper. A W20-1 (ROAD WORK AHEAD) or W21-5b (RIGHT/LEFT SHOULDER CLOSED AHEAD) or C24 (CA) (SHOULDER WORK AHEAD) sign shall be mounted on a crashworthy portable sign support with flags. The sign shall be placed where designated by the Engineer. The sign shall be a minimum of 1200-mm x 1200-mm in size. The Contractor shall immediately restore to the original position and location a traffic cone or delineator that is displaced or overturned, during the progress of work.

A minimum of one paved traffic lane, not less than 3 m wide, shall be open for use by public traffic in each direction of travel.

If minor deviations from the lane requirement charts are required, a written request shall be submitted to the Engineer at least 15 days before the proposed date of the closure. The Engineer may approve the deviations if there is no significant increase in the cost to the State and if the work can be expedited and better serve the public traffic.

When complete freeway, expressway or conventional highway closure is required, only one detour for each direction of travel will be allowed for the following operation: Bridge removal, falsework erection, and falsework removal.

Designated legal holidays are: January 1st, the third Monday in February, the last Monday in May, July 4th, the first Monday in September, November 11th, Thanksgiving Day, and December 25th. When a designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday. When November 11th falls on a Saturday, the preceding Friday shall be a designated legal holiday.

Special Days are: Martin Luther King Day, Lincoln's Birthday, *Good Friday through Easter Sunday* and December 26th through December 31st. **No closure** is allowed on these days.

Lane Closure Restriction for Designated Legal Holidays and Special Days										
Thu	Fri	Sat	Sun	Mon	Tues	Wed	Thu	Fri	Sat	Sun
x	**H** xx	xx	xx							
	SD xx									
x	xx	**H** xx	xx							
		SD xx								
	x	xx	**H** xx	xx						
			SD xx							
	x	xx	xx	**H** xx						
	x	xx	xx	**SD** xx						
				x	**H** xx					
				x	**SD** xx					
					x	**H** xx				
						SD xx				
						x	**H** xx	xx		xx
							SD xx			

Legends:	
	Refer to lane closure charts
x	The full width of the traveled way shall be open for use by public traffic after ___.
xx	The full width of the traveled way shall be open for use by public traffic.
H	Designated Legal Holiday
SD	Special Day

Full compensation for furnishing, erecting, maintaining, and removing and disposing of the C40(CA), W20-1, G20-2, and CF-2 signs shall be considered as included in the contract lump sum price paid for Construction Area Signs and no additional compensation will be allowed therefor.

District 8 Special Events List

No work that encroaches onto the traveled way of the affected Routes shall be allowed from 3 hours before to 2 hours following special events listed below unless otherwise permitted by the District Traffic Manager

Venue/Special Events	Affected Routes	Route Impact	Route Limits	Presently Identified The Month Of Events	Website	Contact #
Hyundai Pavilion	215 15	*** **	University Pkwy to I-15/215 Connector I-60 to Devore Road	Various events May - Oct yearly See web site	www.hyundaipavilion.com	909-880-6500
Route 66 Rendezvous	215	***	Mill St. to 5th St	September	www.route-66.org	909-889-3980
California Speedway	10 15 210 66 60	*** *** *** *** ***	LA I-57 to SBD I-215 I-15/215 to SR-91 Haven to I-215 Haven to Cherry I-15 to County Line	Various events Thru the year See web site	www.californiaspeedway.com	909-429-5000
Temecula Valley Balloon & Wine Festival	15	**	SR-79 (Winchester Rd) and Rancho California	June	www.tvbwf.com	951-676-6713
Bob Hope Chrysler Classic	10	**	Palm Springs off ramp at SR-111	January	www.bhcc.com	760-346-8184
Kraft Nabisco Championship	10	**	Palm Springs off ramp at SR-111	March	www.nabiscochampionship.com	760-324-4546
Festival of Lights (Downtown Riverside)	91	**	I-15 to I-215/SR-60 split	November	No website	951-683-7100
Orange Blossom Festival	91	**	I-15 to I-215/SR-60 split	May	www.obfa.org	951-715-3400
March Air Show March Air Reserve Base	215	***	Cactus to Ramona Express Way	April	No website	909-655-1110
UCR Graduation	60/215	***	I-215/SR-60/SR-91 split to I-215/SR-60 split	June	www.commencement.ucr.edu	951-827-3144

Note: The dates of events change yearly. Contact numbers and websites provided to verify exact dates.

** Designates-Moderate Impact (20 minute delay or less)
*** Designates-High Impact (30 minute delay or less)

Chart No. 1
Freeway/Expressway Lane Requirements

County: Riv	Route/Direction: 10 Eastbound	KP: 62.8/64.2 PM: 39.0/39.9

Closure Limits:

FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	2	2	2	2	2												2	2	2	2	2	2	2	2	
Fridays	2	2	2	2	2														2	2	2	2	2	2	
Saturdays	2	2	2	2	2	2	2	2	2	2								2	2	2	2	2	2	2	
Sundays	2	2	2	2	2	2	2	2	2	2	2							2	2	2	2	2	2	2	

Legend:

1	Provide at least one through freeway lane open in direction of travel
2	Provide at least two adjacent through freeway lanes open in direction of travel
	Work permitted within project right of way where shoulder or lane closure is not required.

REMARKS: See Lane Closure Restriction for Designated Legal Holidays and Special Days table in Maintain Traffic of these special provisions for additional closure restrictions.

Chart No. 2
Freeway/Expressway Lane Requirements

County: Riv	Route/Direction: I-10 Westbound	KP: 62.8/64.2 PM: 39.0/39.9

Closure Limits:

FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	2	2	2	2	2													2	2	2	2	2	2	2	
Fridays	2	2	2	2	2	2														2	2	2	2	2	
Saturdays	2	2	2	2	2	2	2												2	2	2	2	2	2	
Sundays	2	2	2	2	2	2	2	2												2	2	2	2	2	

Legend:

1	Provide at least one through freeway lane open in direction of travel
2	Provide at least two adjacent through freeway lanes open in direction of travel
N	No work permitted
	Work permitted within project right of way where shoulder or lane closure is not required.

REMARKS:See Lane Closure Restriction for Designated Legal Holidays and Special Days table in Maintain Traffic of these special provisions for additional closure restrictions.

Chart No. 3
Complete Ramp Closure Hours/Ramp Lane Requirements

County: Riv	Route/Direction: I-10 Eastbound	KP: 62.8/64.2 PM: 39.0/39.9

Closure Limits:

FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	C	C	C	C													C	C	C	C	C	C	C	C	
Fridays	C	C	C	C															C	C	C	C	C	C	
Saturdays	C	C	C	C	C	C	C	C	C	C								C	C	C	C	C	C	C	
Sundays	C	C	C	C	C	C	C	C	C	C	C							C	C	C	C	C	C	C	

Legend:

C	Ramp may be closed completely
	Work permitted within project right of way where shoulder or lane closure is not required.

REMARKS:See Lane Closure Restriction for Designated Legal Holidays and Special Days table in Maintain Traffic of these special provisions for additional closure restrictions.

Chart No. 4
Complete Ramp Closure Hours/Ramp Lane Requirements

County: Riv	Route/Direction: I-10 Westbound	KP: 62.8/64.2 PM: 39.0/39.9

Closure Limits:

FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	C	C	C	C	C													C	C	C	C	C	C	C	
Fridays	C	C	C	C	C	C														C	C	C	C	C	
Saturdays	C	C	C	C	C	C	C												C	C	C	C	C	C	
Sundays	C	C	C	C	C	C	C	C												C	C	C	C	C	

Legend:

C	Ramp may be closed completely
	Work permitted within project right of way where shoulder or lane closure is not required.

REMARKS:See Lane Closure Restriction for Designated Legal Holidays and Special Days table in Maintain Traffic of these special provisions for additional closure restrictions.

Chart No. 5
Complete Freeway/Expressway Closure Hours

County: Riv	Route/Direction: I-10 Eastbound	KP: 62.8/64.2 PM: 39.0/39.9

Closure Limits:

FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	F	F	F	F																	F	F	F	F	
Fridays	F	F	F	F																			F	F	
Saturdays	F	F	F	F	F																		F	F	
Sundays	F	F	F	F	F	F	F																F	F	

Legend:

F	Freeway or expressway may be closed completely.
	No complete freeway or expressway closure is permitted.

REMARKS: See Lane Closure Restriction for Designated Legal Holidays and Special Days table in Maintain Traffic of these special provisions for additional closure restrictions.

Chart No. 6
Complete Freeway/Expressway Closure Hours

County: Riv	Route/Direction: I-10 Westbound	KP: 62.8/64.2 PM: 39.0/39.9

Closure Limits:

FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	F	F	F	F																		F	F	F	
Fridays	F	F	F	F																			F	F	
Saturdays	F	F	F	F	F																		F	F	
Sundays	F	F	F	F	F	F	F																F	F	

Legend:

F	Freeway or expressway may be closed completely.
	No complete freeway or expressway closure is permitted.

REMARKS:

Erection and removal of falsework at locations where falsework openings are required shall be undertaken one location at a time. During falsework erection and removal, public traffic in the lanes over which falsework is being erected or removed shall be detoured or stopped as specified in this section, "Maintaining Traffic". Falsework erection shall include adjustments or removal of components that contribute to the horizontal stability of the falsework system. Falsework removal shall include lowering falsework, blowing sand from sand jacks, turning screws on screw jacks, and removing wedges.

The Contractor shall have necessary materials and equipment on the site to erect or remove the false work in any one span or over any one opening before detouring or stopping public traffic.

10-1.42 CLOSURE REQUIREMENTS AND CONDITIONS:

Closures shall conform to the provisions in "Maintaining Traffic" of these Special Provisions and these Special Provisions.

CLOSURE SCHEDULE

By noon Monday, the Contractor shall submit a written schedule of planned closures for the following week period, defined as Sunday noon through the following Sunday noon. Closures involving work (temporary barrier placement and paving operations) that will reduce horizontal clearances, traveled way inclusive of shoulders, to 2 lanes or less shall be submitted not less than 25 days and not more than 125 days before the anticipated start of operation. Closures involving work (pavement overlay, overhead sign installation, falsework and girder erection) that will reduce the vertical clearances available to the public, shall be submitted not less than 25 days and not more than 125 days before the anticipated start of operation.

The Closure Schedule shall show the locations and times of the proposed closures. The Closure Schedule request forms furnished by the Engineer shall be used. Closure Schedules submitted to the Engineer with incomplete or inaccurate information will be rejected and returned for correction and resubmittal. The Contractor will be notified of disapproved closures or closures that require coordination with other parties as a condition of approval.

Closure Schedule amendments, including adding additional closures, shall be submitted by noon to the Engineer, in writing, at least 3 business days in advance of a planned closure. Approval of Closure Schedule amendments will be at the discretion of the Engineer.

The Engineer shall be notified of cancelled closures 2 business days before the date of closure.

Closures that are cancelled due to unsuitable weather may be rescheduled at the discretion of the Engineer.

CONTINGENCY PLAN

A detailed contingency plan shall be prepared for reopening closures to public traffic. If required by "Beginning of Work, Time of Completion and Liquidated Damages" of these Special Provisions, the contingency plan shall be submitted to the Engineer before work at the job site begins. Otherwise, the contingency plan shall be submitted to the Engineer within one business day of the Engineer's request.

LATE REOPENING OF CLOSURES

If a closure is not reopened to public traffic by the specified time, work shall be suspended in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work" of the Standard Specifications. No further closures are to be made until the Engineer has accepted a work plan, submitted by the Contractor that will insure that future closures will be reopened to public traffic at the specified time. The Engineer will have 2 business days to accept or reject the Contractor's proposed work plan. The Contractor will not be entitled to compensation for the suspension of work resulting from the late reopening of closures.

For each 10-minute interval, or fraction thereof past the time specified to reopen the full freeway closure, the Department will deduct $5,000 per interval from moneys due or that may become due the Contractor under the contract.

COMPENSATION

The Engineer shall be notified of delays in the Contractor's operations due to the following conditions, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of those conditions, and the Contractor's loss due to that delay could not have been avoided by rescheduling the affected closure or by judicious handling of forces, equipment and plant, the delay will be considered a right of way delay and will be compensated in conformance with the provisions in Section 8-1.09, "Right of Way Delays" of the Standard Specifications:

A. The Contractor's proposed Closure Schedule is denied and his planned closures are within the time frame allowed for closures in "Maintaining Traffic" of these Special Provisions, except that the Contractor will not be entitled to compensation for amendments to the Closure Schedule that are not approved.

B. The Contractor is denied a confirmed closure.

Should the Engineer direct the Contractor to remove a closure before the time designated in the approved Closure Schedule, delay to the Contractor's schedule due to removal of the closure will be considered a right of way delay and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09, "Right of Way Delays" of the Standard Specifications.

10-1.43 IMPACT ATTENUATOR VEHICLE:

GENERAL

Summary

Work includes protecting traffic and workers by using impact attenuator vehicle as a shadow vehicle when placing and removing components of a traffic control system, and when performing a moving lane closure.

Comply with Section 12-3.03, "Flashing Arrow Signs" of the Standard Specifications.

Impact attenuator vehicle must comply with the following test levels under National Cooperative Highway Research Program 350:

A. Test level 3 for pre-construction posted speed limit of 80 km/hr or more.
B. Test levels 2 or 3 for pre-construction posted speed limit of 70 km/hr or less.

Comply with the attenuator manufacturer's recommendations for:

A. Support truck.
B. Trailer-mounted operation.
C. Truck-mounted operation.

Definitions

impact attenuator vehicle: Support truck towing a deployed attenuator mounted to a trailer or support truck with a deployed attenuator mounted to the support truck.

Submittals

Upon request, submit a Certificate of Compliance for attenuator to the Engineer under Section 6-1.07, "Certificates of Compliance" of the Standard Specifications.

Quality Control and Assurance

Attenuator must be a brand listed on the Department's pre-approved list at: http://www.dot.ca.gov/hq/esc/approved_products_list/HighwaySafe.htm

MATERIALS

The combined mass of the support truck and the attenuator must be at least 9000 kg, except the mass of the support truck must not be less than 7300 kg or greater than 12000 kg.

If using the Trinity MPS-350 truck-mounted attenuator, the support truck must not have any underneath fuel tank mounted within 3.2 m of the rear of the support truck.

Each impact attenuator vehicle must:

A. Have standard brake lights, taillights, sidelights, and turn signals.
B. Have an inverted "V" chevron pattern placed across the entire rear of the attenuator composed of alternating 100-mm wide non-reflective black stripes and 100-mm wide yellow retroreflective stripes sloping at 45 degrees.
C. Have a Type II flashing arrow sign.
D. Have a flashing or rotating amber light.
E. Have an operable 2-way communication system for maintaining contact with workers.

CONSTRUCTION

Use impact attenuator vehicle to follow behind equipment and workers who are placing and removing components of a traffic control system for a lane closure or a ramp closure. Flashing arrow sign must be operating in arrow mode during this activity. Follow at a distance to prevent intrusion into the workspace from passing traffic.

After placing components of a traffic control system for a lane closure or a ramp closure you may use impact attenuator vehicle in a closed lane and in advance of a work area to protect traffic and workers.

Use impact attenuator vehicle as a shadow vehicle under traffic control for a moving lane closure.

Secure objects including equipment, tools and ballast on impact attenuator vehicle to prevent loosening upon impact by an errant vehicle.

Do not use a damaged attenuator in the work. Replace, at your expense, an attenuator damaged from an impact during work.

MEASUREMENT AND PAYMENT

Full compensation for furnishing and operating impact attenuator vehicle shall be included in the contract lump sum price paid for Traffic Control System, and no additional compensation will be allowed therefor.

10-1.44 TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE:

A traffic control system shall consist of closing traffic lanes and ramps in conformance with the details shown on the plans, the provisions in Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications, the provisions under "Maintaining Traffic" and "Construction Area Signs" of these Special Provisions, and these Special Provisions.

The provisions in this section will not relieve the Contractor from the responsibility to provide additional devices or take measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety" of the Standard Specifications.

Each vehicle used to place, maintain and remove components of a traffic control system on multilane highways shall be equipped with a Type II flashing arrow sign which shall be in operation when the vehicle is being used for placing, maintaining or removing components. Vehicles equipped with Type II flashing arrow sign not involved in placing, maintaining or removing components when operated within a stationary lane closure shall only display the caution display mode. The sign shall be controllable by the operator of the vehicle while the vehicle is in motion. The flashing arrow sign shown on the plans shall not be used on vehicles which are being used to

place, maintain and remove components of a traffic control system and shall be in place before a lane closure requiring its use is completed.

The 500 m section of lane closure, shown along lane lines between the 300 m lane closure tapers on the plans entitled "Traffic Control System for Lane Closures on Freeways and Expressways" and "Traffic Control System for Lane and Complete Closures on Freeways and Expressways" shall not be used.

If components in the traffic control system are displaced or cease to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the components to the original condition or replace the components and shall restore the components to the original location.

When lane and ramp closures are made for work periods only, at the end of each work period, components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations designated by the Engineer within the limits of the highway right of way.

The contract lump sum price paid for Traffic Control System shall include full compensation for furnishing all labor, materials (including signs), tools, equipment, and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing, and disposing of the components of the traffic control system shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

The adjustment provisions in Section 4-1.03, "Changes" of the Standard Specifications shall not apply to the item of traffic control system. Adjustments in compensation for traffic control system will be made only for increased or decreased traffic control system required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased traffic control necessary. The adjustment will be made on a force account basis as provided in Section 9-1.03, "Force Account Payment" of the Standard Specifications for increased work and estimated on the same basis in the case of decreased work.

Traffic control system required by work which is classed as extra work, as provided in Section 4-1.03D of the Standard Specifications, will be paid for as a part of the extra work.

10-1.45 TEMPORARY PAVEMENT DELINEATION:

Temporary pavement delineation shall be furnished, placed, maintained, and removed in conformance with the provisions in Section 12-3.01, "General" of the Standard Specifications and these Special Provisions. Nothing in these Special Provisions shall be construed as reducing the minimum standards specified in the California MUTCD or as relieving the Contractor from the responsibilities specified in Section 7-1.09, "Public Safety" of the Standard Specifications.

GENERAL

When the work causes obliteration of pavement delineation, temporary or permanent pavement delineation shall be in place before opening the traveled way to public traffic. Laneline or centerline pavement delineation shall be provided for traveled ways open to public traffic. On multilane roadways (freeways and expressways) edgeline delineation shall be provided for traveled ways open to public traffic.

The Contractor shall perform the work necessary to establish the alignment of temporary pavement delineation, including required lines or markers. Surfaces to receive application of paint or removable traffic tape temporary pavement delineation shall be dry and free of dirt and loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary pavement delineation. Temporary pavement delineation shall be maintained until superseded or replaced with a new pattern of temporary pavement delineation or permanent pavement delineation, or as determined by the Engineer.

Temporary pavement markers, including underlying adhesive, and removable traffic tape that are applied to the final layer of surfacing or existing pavement to remain in place or that conflicts with a subsequent or new traffic pattern for the area shall be removed when no longer required for the direction of public traffic, as determined by the Engineer.

TEMPORARY LANELINE AND CENTERLINE DELINEATION

When lanelines or centerlines are obliterated and temporary pavement delineation to replace the lines is not shown on the plans, the minimum laneline and centerline delineation to be provided for that area shall be temporary pavement markers placed at longitudinal intervals of not more than 7.3 m. The temporary pavement markers shall be the same color as the laneline or centerline the pavement markers replace. Temporary pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers listed for short term day/night use (14 days or less) or long term day/night use (180 days or less) in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions. The temporary pavement markers shall be placed in conformance with the manufacturer's instructions. Temporary pavement markers for long term day/night use (180 days or less) shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place the temporary pavement markers in areas where removal of the temporary pavement markers will be required.

Temporary laneline or centerline delineation consisting entirely of temporary pavement markers listed for short term day/night use (14 days or less), shall be placed on longitudinal intervals of not more than 7.3 m and shall be used for a maximum of 14 days on lanes opened to public traffic. Before the end of the 14 days the permanent pavement delineation shall be placed. If the permanent pavement delineation is not placed within the 14 days, the Contractor shall replace the temporary pavement markers and provide additional temporary pavement delineation and shall bear the cost thereof. The additional temporary pavement delineation to be provided shall be

equivalent to the pattern specified for the permanent pavement delineation for the area, as determined by the Engineer.

TEMPORARY EDGELINE DELINEATION

On multilane roadways (freeways and expressways), when edgelines are obliterated and temporary pavement delineation to replace those edgelines is not shown on the plans, the edgeline delineation to be provided for those areas adjacent to lanes open to public traffic shall be as follows:

A. Temporary pavement delineation for right edgelines shall, at the option of the Contractor, consist of either traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 30 m.

B. Temporary pavement delineation for left edgelines shall, at the option of the Contractor, consist of either traffic cones, portable delineators or channelizers placed at longitudinal intervals not to exceed 30 m or temporary pavement markers placed at longitudinal intervals of not more than 1.8 m.

Where removal of the 100-mm wide traffic stripe will not be required, painted traffic stripe conforming to the provisions of "Temporary Traffic Stripe (Paint)" of these Special Provisions may be used.

The lateral offset for traffic cones, portable delineators or channelizers used for temporary edgeline delineation shall be as determined by the Engineer. If traffic cones or portable delineators are used as temporary pavement delineation for edgelines, the Contractor shall provide personnel to remain at the project site to maintain the cones or delineators during the hours of the day that the portable delineators are in use.

Channelizers used for temporary edgeline delineation shall be the surface mounted type and shall be orange in color. Channelizer bases shall be cemented to the pavement in the same manner provided for cementing pavement markers to pavement in "Pavement Markers" of these Special Provisions, except epoxy adhesive shall not be used to place channelizers on the top layer of pavement. Channelizers shall be, at the Contractor's option, one of the surface mount types (900-mm) listed in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

Temporary edgeline delineation shall be removed when no longer required for the direction of public traffic as determined by the Engineer.

TEMPORARY TRAFFIC STRIPE (PAINT)

The painted temporary traffic stripe shall be complete in place at the location shown before opening the traveled way to public traffic. Removal of painted temporary traffic stripe will not be required.

Temporary painted traffic stripe shall conform to the provisions in "Paint Traffic Stripe and Pavement Marking" of these Special Provisions, Section 84-3, "Painted Traffic Stripes and Pavement Markings" of the Standard Specifications, except for payment. At the option of the Contractor, either one or 2 coats shall be applied regardless of whether on new or existing pavement.

TEMPORARY PAVEMENT MARKING (PAINT)

Temporary pavement marking consisting of painted pavement marking shall be applied and maintained at the locations shown on the plans. The painted temporary pavement marking shall be complete in place at the location shown before opening the traveled way to public traffic. Removal of painted temporary pavement marking will not be required.

Temporary painted pavement marking shall conform to the provisions in "Paint Traffic Stripe and Pavement Marking" of these Special Provisions, except for payment. At the option of the Contractor, either one or 2 coats shall be applied regardless whether on new or existing pavement.

At the Contractor's option, temporary removable pavement marking tape or permanent pavement marking tape listed in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions may be used instead of painted temporary pavement markings. When pavement marking tape is used, regardless of which type of tape is placed, the tape will be measured and paid for by the square meter as Temporary Pavement Marking (Paint).

TEMPORARY PAVEMENT MARKER

Temporary pavement markers shall be applied complete in place before opening the traveled way to public traffic.

Temporary pavement markers shall be, at the option of the Contractor, one of the temporary pavement markers for long term day/night use (180 days or less) listed in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

Temporary pavement markers shall be placed in conformance with the manufacturer's instructions and shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used in areas where removal of the pavement markers will be required.

Retroreflective pavement markers conforming to the provisions in "Pavement Markers" of these Special pPovisions may be used in place of temporary pavement markers for long term day/night use (180 days or less) except to simulate patterns of broken traffic stripe. Placement of the retroreflective pavement markers used for temporary pavement markers shall conform to the provisions in "Pavement Markers" of these Special Provisions except the waiting period provisions before placing the pavement markers on new hot mix asphalt surfacing as specified in Section 85-1.06, "Placement" of the Standard Specifications shall not apply and epoxy adhesive shall

not be used to place pavement markers in areas where removal of the pavement markers will be required.

MEASUREMENT AND PAYMENT

Temporary traffic stripe and temporary pavement marking shown on the plans will be measured and paid for in the same manner specified for paint traffic stripe and paint pavement marking in Section 84-3.06, "Measurement" and Section 84-3.07, "Payment" of the Standard Specifications.

Temporary pavement markers shown on the plans will be measured and paid for by the unit in the same manner specified for retroreflective pavement markers in Section 85-1.08, "Measurement" and Section 85-1.09, "Payment" of the Standard Specifications.

Full compensation for furnishing, placing, maintaining, and removing the temporary pavement markers (including underlying adhesive, layout (dribble) lines to establish alignment of temporary pavement markers or used for temporary laneline and centerline delineation) for those areas where temporary laneline and centerline delineation is not shown on the plans and for providing equivalent patterns of permanent traffic lines for those areas when required, shall be considered as included in the contract prices paid for the items of work that obliterated the laneline and centerline pavement delineation and no separate payment will be made therefor.

Full compensation for furnishing, placing, maintaining, and removing temporary edgeline delineation not shown on the plans shall be considered as included in the contract prices paid for the items of work that obliterated the edgeline pavement delineation and no separate payment will be made therefor. The quantity of channelizers used as temporary edgeline delineation will not be included in the quantity of channelizer (surface mounted) to be paid for.

10-1.46 FLASHING BEACON (PORTABLE):

Portable flashing beacons conforming to the provisions in Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications shall be furnished, placed and maintained at the locations shown on the plans or where designated by the Engineer.

If flashing beacons are displaced or are not in an upright position from any cause, during the progress of the work, the Contractor shall immediately repair and repaint or replace the flashing beacons in their original locations.

After initial placement, if flashing beacons are moved from location to location as ordered by the Engineer, the cost of the moves will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

The quantity of flashing beacon (portable) to be paid for will be measured by the unit as determined from actual count in place at the locations shown on the plans or at other locations designated by the Engineer. Each flashing beacon will be counted once at each location shown on the plans or at other locations determined by the Engineer. Repaired or replacement portable flashing beacons placed at the locations will not be considered as additional units for payment purposes. Portable flashing beacons shown on the plans as part of a traffic control system shall be considered as part of that traffic control system and will be paid for in conformance with the provisions in "Traffic Control System for Lane Closures" of these Special Provisions.

Portable flashing beacons are to remain in place and operative at locations shown on the plans during all times that temporary railing (Type K) is in place on I-10 for the erection, protection and removal of bridge falsework.

The contract unit price paid for Flashing Beacon (Portable) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, placing, operating, maintaining, repairing, replacing, and removing portable flashing beacons, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

10-1.47 BARRICADE:

Barricades shall be furnished, placed and maintained at the locations shown on the plans, specified in the Standard Specifications or in these Special Provisions or where designated by the Engineer. Barricades shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications and these Special Provisions.

Attention is directed to "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions regarding retroreflective sheeting for barricades.

Barricades shown on the plans as part of a traffic control system will be paid for as provided in "Traffic Control System for Lane Closure" of these Special Provisions and will not be included in the count for payment of barricades.

10-1.48 PORTABLE CHANGEABLE MESSAGE SIGN:

Portable changeable message signs shall be furnished, placed, operated, and maintained at locations shown on the plans or where designated by the Engineer and shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications and these Special Provisions. Messages displayed on the portable changeable message signs shall be as specified on the plans and shall conform to Section 12-3.12 "Portable Changeable Message Signs" of the Standard Specifications and "Maintaining Traffic" of these Special Provisions".

A portable changeable message sign shall be placed before and during ramp and connector closures.

A portable changeable message sign shall be placed during speed zone reductions. When used in conjunction with a lane closure, use one portable changeable message sign, with both the speed zone reduction and the lane closure messages.

Payment – Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be paid per each for Portable Changeable Message Sign and no additional compensation will be allowed therefor.

10-1.49 TEMPORARY RAILING (TYPE K):

Temporary railing (Type K) shall be placed as shown on the plans, as specified in the Standard Specifications or these Special Provisions or where ordered by the Engineer and shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications and these Special Provisions.

Temporary railing (Type K) shall be secured in place before starting work for which the temporary railing is required. Temporary railing that is in place for more than 5 calendar days shall be pinned in place with four dowels per railing section. Dowels shall be 25-mm in nominal diameter with a length of 600-mm and shall conform to ASTM Designation A 36/A 36M. Dowels shall be installed so as not to extend above the surface of the railing. Holes left in pavement surface upon removal of temporary railing shall be filled as directed by The Engineer.

Reflectors on temporary railing (Type K) shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

Temporary railing (Type K) placed in conformance with the provisions in "Public Safety" of these Special Provisions will be neither measured nor paid for.

Payment – Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be paid per meter for Temporary Railing (Type K) and no additional compensation will be allowed therefor.

10-1.50 CHANNELIZER (SURFACE MOUNTED):

Channelizers shall conform to the provisions in Section 12, "Construction Area Traffic Control Devices" of the Standard Specifications and these Special Provisions.

Channelizers shall conform to the provisions in "Prequalified and Tested Signing and Delineation Materials" of these Special Provisions.

When no longer required for the work as determined by the Engineer, channelizers and underlying adhesive used to cement the channelizer bases to the pavement shall be removed. Removed channelizers and adhesive shall become the property of the Contractor and shall be removed from the site of work.

Payment – Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be paid per each for Channelizer (Surface Mounted) and no additional compensation will be allowed therefor.

10-1.51 TEMPORARY CRASH CUSHION MODULE:

This work shall consist of furnishing, installing, and maintaining sand filled temporary crash cushion modules in groupings or arrays at each location shown on the plans, as specified in these Special Provisions or where designated by the Engineer. The grouping or array of sand filled modules shall form a complete sand filled temporary crash cushion in conformance with the details shown on the plans and these Special Provisions.

Attention is directed to "Public Safety" and "Temporary Railing" of these Special Provisions.

Temporary crash cushions shall be secured in place prior to commencing work for which the temporary crash cushions are required.

Whenever the work or the Contractor's operations establishes a fixed obstacle, the exposed fixed obstacle shall be protected with a sand filled temporary crash cushion. The sand filled temporary crash cushion shall be in place prior to opening the lanes adjacent to the fixed obstacle to public traffic.

Sand filled temporary crash cushions shall be maintained in place at each location, including times when work is not actively in progress. Sand filled temporary crash cushions may be removed during a work period for access to the work provided that the exposed fixed obstacle is 4.6 m or more from a lane carrying public traffic and the temporary crash cushion is reset to protect the obstacle prior to the end of the work period in which the fixed obstacle was exposed. When no longer required, as determined by the Engineer, sand filled temporary crash cushions shall be removed from the site of the work.

At the Contractor's option, the modules for use in sand filled temporary crash cushions shall be either Energite III Inertial Modules, Fitch Inertial Modules or TrafFix Sand Barrels manufactured after March 31, 1997, or equal:

A. Energite III and Fitch Inertial Modules, manufactured by Energy Absorption Systems, Inc., 35 East Wacker Drive, Suite 1100, Chicago, IL 60601:

    1. Northern California: Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, telephone (800) 884-8274, FAX (916) 387-9734.

2. Southern California: Traffic Control Service, Inc., 1818 E. Orangethorpe, Fullerton, CA 92831-5324, telephone (800) 222-8274, FAX (714) 526-9501.

B. TrafFix Sand Barrels, manufactured by TrafFix Devices, Inc., 220 Calle Pintoresco, San Clemente, CA 92672, telephone (949) 361-5663, FAX (949) 361-9205.

1. Northern California: United Rentals, Inc., 1533 Berger Drive, San Jose, CA 95112, telephone (408) 287-4303, FAX (408) 287-1929.

2. Southern California: Statewide Safety & Sign, Inc., P.O. Box 1440, Pismo Beach, CA 93448, telephone (800) 559-7080, FAX (805) 929-5786.

Modules contained in each temporary crash cushion shall be of the same type at each location. The color of the modules shall be the standard yellow color, as furnished by the vendor, with black lids. The modules shall exhibit good workmanship free from structural flaws and objectionable surface defects. The modules need not be new. Good used undamaged modules conforming to color and quality of the types specified herein may be utilized. If used Fitch modules requiring a seal are furnished, the top edge of the seal shall be securely fastened to the wall of the module by a continuous strip of heavy duty tape.

Modules shall be filled with sand in conformance with the manufacturer's directions, and to the sand capacity in kilograms for each module shown on the plans. Sand for filling the modules shall be clean washed concrete sand of commercial quality. At the time of placing in the modules, the sand shall contain not more than 7 percent water as determined by California Test 226.

Modules damaged due to the Contractor's operations shall be repaired immediately by the Contractor at the Contractor's expense. Modules damaged beyond repair, as determined by the Engineer, due to the Contractor's operations shall be removed and replaced by the Contractor at the Contractor's expense.

Temporary crash cushion modules may be placed on movable pallets or frames. Comply with dimensions shown on the plans. The pallets or frames shall provide a full bearing base beneath the modules. The modules and supporting pallets or frames shall not be moved by sliding or skidding along the pavement or bridge deck.

A Type R or P marker panel shall be attached to the front of the crash cushion as shown on the plans, when the closest point of the crash cushion array is within 3.6 m of the traveled way. The marker panel, when required, shall be firmly fastened to the crash cushion with commercial quality hardware or by other methods determined by the Engineer.

At the completion of the project, temporary crash cushion modules, sand filling, pallets or frames, and marker panels shall become the property of the Contractor and shall be removed from the site of the work. Temporary crash cushion modules shall not be installed in the permanent work.

Temporary crash cushion modules will be measured by the unit as determined from the actual count of modules used in the work or ordered by the Engineer at each location. Temporary crash cushion modules placed in conformance with the provisions in "Public Safety" of these Special Provisions and modules placed in excess of the number specified or shown will not be measured nor paid for.

Repairing modules damaged by public traffic will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications. Modules damaged beyond repair by public traffic, when ordered by the Engineer, shall be removed and replaced immediately by the Contractor. Modules replaced due to damage by public traffic will be measured and paid for as temporary crash cushion module.

If the Engineer orders a lateral move of the sand filled temporary crash cushions and the repositioning is not shown on the plans, moving the sand filled temporary crash cushion will be paid for as extra work as provided in Section 4-1.03D of the Standard Specifications and these temporary crash cushion modules will not be counted for payment in the new position.

The contract unit price paid for Temporary Crash Cushion Module shall include full compensation for furnishing all labor, materials (including sand, pallets or frames and marker panels), tools, equipment, and incidentals, and for doing all the work involved in furnishing, installing, maintaining, moving, and resetting during a work period for access to the work, and removing from the site of the work when no longer required (including those damaged by public traffic) sand filled temporary crash cushion modules, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

10-1.52 EXISTING HIGHWAY FACILITIES:

The work performed in connection with various existing highway facilities shall conform to the provisions in Section 15, "Existing Highway Facilities" of the Standard Specifications and these Special Provisions.

Existing footing concrete that is below ground and outside of the footing limits shown on the contract plans or original contract plans shall be removed as directed by the Engineer and will be paid in conformance with Section 4-1.03D, "Extra Work" of the Standard Specifications.

EARTH MATERIAL CONTAINING LEAD

General

This work includes handling earth material containing lead under the Standard Specifications and these Special Provisions.

Submittals

Submit a lead compliance plan under Section 7-1.07, "Lead Compliance Plan" of the Standard Specifications.

Project Conditions

Lead is present in earth material within the project limits at average concentrations below 1,000 mg/kg total lead and below 5 mg/l soluble lead. Earth material within the project limits:

A. Is not a hazardous waste.
B. Does not require disposal at a permitted landfill or solid waste disposal facility.

Lead is typically found within the top 2 feet of material in unpaved areas of the highway. Reuse all excavated earth material within the project limits.

Construction

Handle earth material containing lead under all applicable laws, rules, and regulations, including those of the following agencies:

A. Cal/OSHA.
B. CA Regional Water Quality Control Board, Region 7 – Colorado River Basin.
C. CA Department of Toxic Substances Control.

Measurement and Payment

Full compensation for handling earth material containing lead is included in the contract unit price price paid per cubic meter for Roadway Excavation, and no additional compensation will be allowed therefor.

REMOVE METAL BEAM GUARD RAILING

Existing metal beam guard railing, where shown on the plans to be removed, shall be removed and disposed of.

Existing concrete anchors or steel foundation tubes shall be completely removed and disposed of. Full compensation for removing concrete anchors, cable anchor assemblies, terminal anchor assemblies or steel foundation tubes shall be considered as included in the contract price paid per meter for Remove Metal Beam Guard Railing and no separate payment will be made therefor.

The contract unit bid price paid per meter for Remove Metal Beam Guard Railing shall include full compensation for furnishing all labor, tools, materials, equipment and incidentals, and for doing all the work involved and no separate payment will be made therefor.

REMOVE METAL BEAM BARRIER

Existing metal beam barrier where shown on the plans to be removed, shall be removed and disposed of.

Existing concrete anchors or steel foundation tubes shall be completely removed and disposed of.

The contract unit bid price paid per meter for Remove Metal Beam Barrier shall include full compensation for furnishing all labor, tools, materials, equipment and incidentals, and for doing all the work involved including the removal of concrete anchors or steel foundation tubes and no separate payment will be made therefor.

TREATED-WOOD WASTE

This work includes handling, storing, transporting, and disposing treated-wood waste. Wood removed from metal beam guard railing is treated with creosote, pentachlorophenol, copper azole, copper boron azole, chromated copper arsenate, ammoniacal copper zinc arsenate, copper naphthenate, or alkaline copper quaternary. Treated-wood waste must be disposed in an approved treated-wood-waste facility. A list of currently approved treated-wood-waste facilities may be viewed at: http://www.dtsc.ca.gov/HazardousWaste/upload/TWW_Confirmed_Landfill_List.pdf

Manage treated-wood waste under Title 22 CA Code of Regulations, Division 4.5, Chapter 34.

Personnel who handle treated-wood waste or may come in contact with treated-wood waste must receive training that includes:

A. All applicable requirements of Title 8 CA Code of Regulations.
B. Procedures for identifying and segregating treated-wood waste.
C. Safe handling practices.
D. Requirements of Title 22 CA Code of Regulations, Division 4.5, Chapter 34.
E. Proper disposal methods.

Store treated-wood waste before disposal using any of the following methods:

A. Elevated on blocks above a reasonably foreseeable run-on elevation and protected from precipitation.
B. Placed in water-resistant containers designed for shipping or solid waste collection.
C. Placed on a containment surface protected from run-on and precipitation.

Prevent unauthorized access to treated-wood waste using a secured enclosure such as a locked chain link fenced area or a lockable shipping container. The enclosure must be located within the project limits.

Resizing or segregating treated-wood waste must be done at a location where debris from the operation including sawdust and chips can be contained. The debris must be collected and managed as treated-wood waste.

Provide water-resistant labels to clearly mark and identify treated-wood waste. Labels on treated-wood waste and accumulation areas must comply with Title 22 CA Code of Regulations, Division 4.5, Chapter 34, § 67386.5. The label must include:

A. In treated wood waste handler area:

1. Caltrans, District number, Construction, contract number.
2. District office address.
3. Engineer's name, address, and telephone number.
4. Contractor's contact name and telephone number.

Before transporting treated-wood waste, obtain agreement from the receiving facility that the treated-wood waste will be accepted. Protect shipments of treated-wood waste from loss and exposure to precipitation. Request a generator identification number from the Engineer at least 5 days before the first shipment. Each shipment must be accompanied by a shipping record such as a manifest or bill of lading that includes:

A. Caltrans, District number, Construction, contract number, generator identification number.
B. District office address.
C. Engineer name, address, and telephone number.
D. Contractor contact name and telephone number.
E. Receiving facility name and address.
F. Waste description: Treated wood waste (preservative type if known or unknown/mixture).
G. Project location.
H. Estimated quantity of shipment by weight or volume.
I. Date of transport.
J. Date of receipt.
K. Weight of shipment as measured by the receiving treated-wood-waste facility.

The shipping document must be at least a 4-part carbon or carbonless 8-1/2" x 11" form to allow retention of copies by the Engineer, transporter, and disposal facility. Submit a copy of each completed shipping record and weight receipt to the Engineer.

Dispose of treated-wood waste within:

A. 90 days of generation if stored on blocks.
B. 90 days of filling a container if containerized.
C. 180 days of generation if stored on a containment surface.

Full compensation for handling, storing, transporting, and disposing treated-wood waste, including personnel training, shall be included in the contract prices paid for Remove Metal Beam Guard Railing, and Remove Metal Beam Barrier and no additional compensation will be allowed therefor.

REMOVE PAVEMENT MARKER

Existing pavement markers, including underlying adhesive, when no longer required for traffic lane delineation as determined by the Engineer, shall be removed and disposed of.

The contract unit bid price paid per each for Remove Pavement Marker shall include full compensation for furnishing all labor, tools, materials, equipment and incidentals, and for doing all the work involved and no separate payment will be made therefor.

REMOVE TRAFFIC STRIPE AND PAVEMENT MARKING

This work includes removing existing traffic stripe and pavement marking at the locations shown on the plans.

Submit a lead compliance plan under Section 7-1.07, "Lead Compliance Plan" of the Standard Specifications.

Waste residue from removal of thermoplastic and painted traffic stripe and pavement marking is a non–hazardous waste residue and contains lead in average concentrations less than 1000 mg/kg total lead and 5 mg/L soluble lead. This waste residue does not contain heavy metals in concentrations that exceed thresholds established by the Health and Safety Code and 22 CA Code of Regs and is not regulated under the Federal Resource Conservation and Recovery Act (RCRA), 42 USC § 6901 et seq.

Full compensation for Lead Compliance Plan shall be included in the contract unit prices involved and shall include the furnishing of all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing the Lead Compliance Plan, including paying the Certified Industrial Hygienist, and for providing personnel protective equipment, training, air monitoring, and medical surveillance, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer and no separate payment will be made therefor.

REMOVE DRAINAGE FACILITY

Existing pipe culverts, box culverts, inlets, headwalls and endwalls, where any portion of these structures is within one meter of the grading plane in excavation areas, or within 0.3 m of original ground in embankment areas, or where shown on the plans to be removed, shall be completely removed and disposed of.

Full compensation shall be included in the various bid items of work as shown in the Engineer's Estimate and shall include full compensation for furnishing all labor, tools, materials, equipment and incidentals, and for doing all the work involved as

specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer and no separate payment will be made therefor.

REMOVE ROADSIDE SIGN

Existing roadside signs, at those locations shown on the plans to be removed, shall be removed and disposed of.

Existing roadside signs shall not be removed until replacement signs have been installed or until the existing signs are no longer required for the direction of public traffic, unless otherwise directed by the Engineer.

The contract unit bid price paid per each for Remove Roadside Sign shall include full compensation for furnishing all labor, tools, materials, equipment and incidentals, and for doing all the work involved as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer and no separate payment will be made therefor.

BRIDGE REMOVAL (PORTION)

Removing portions of the bridge shall conform to the provisions in Section 15-4, "Bridge Removal" of the Standard Specifications and these Special Provisions.

Bridge removal (portion) for the Date Palm Drive Overcrossing (Bridge No. 56-0560) shall include, but not be limited to, removing the following as shown on the plans:

A. Existing concrete overhangs.
B. Existing metal railings.
C. Portions of existing abutment walls and wingwalls.
D. Portion of existing bridge soffit slab.

Removed materials that are not to be salvaged or used in the reconstruction shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

The Contractor shall submit a complete bridge removal plan to the Engineer for each bridge listed above, detailing procedures, sequences, and all features required to perform the removal in a safe and controlled manner.

The bridge removal plan shall include, but not be limited to the following:

A. The removal sequence, including staging of removal operations.
B. Equipment locations on the structure during removal operations.
C. Temporary support shoring or temporary bracing.
D. Locations where work is to be performed over traffic, or utilities.
E. Details, locations, and types of protective covers to be used.
F. Measures to assure that people, property, utilities, and improvements will not be endangered.

G. Details and measures for preventing material, equipment, and debris from falling onto public traffic.

When protective covers are required for removal of portions of a bridge, or when superstructure removal works on bridges are involved, the Contractor shall submit working drawings, with design calculations, to the Engineer for the proposed bridge removal plan, and the bridge removal plan shall be prepared and signed by an Engineer who is registered as a Civil Engineer in the State of California. The design calculations shall be adequate to demonstrate the stability of the structure during all stages of the removal operations. Calculations shall be provided for each stage of bridge removal and shall include dead and live load values assumed in the design of protective covers.

Temporary support shoring, temporary bracing, and protective covers, as required, shall be designed and constructed in conformance with the provisions in Section 51-1.06, "Falsework" of the Standard Specifications and these Special Provisions.

The assumed horizontal load to be resisted by the temporary support shoring and temporary bracing, for removal operations only, shall be the sum of the actual horizontal loads due to equipment, construction sequence or other causes, and an allowance for wind, but in no case shall the assumed horizontal load to be resisted in any direction be less than 5 percent of the total dead load of the structure to be removed.

The bridge removal plan shall conform to the provisions in Section 5-1.02, "Plans and Working Drawings" of the Standard Specifications. The number of sets of drawings, design calculations, and the time for reviewing bridge removal plans shall be the same as specified for falsework working drawings in Section 51-1.06A, "Falsework Design and Drawings" of the Standard Specifications.

The following additional requirements apply to the removal of portions of the bridge that are over or adjacent to roadways that may be closed to public traffic for only brief periods of time:

A. The closure of roadways to public traffic shall conform to the provisions in "Order of Work" and "Maintaining Traffic" of these Special Provisions.

B. Prior to closing a roadway to traffic to accommodate bridge removal operations, the Contractor shall have all necessary workers, materials, and equipment at the site as needed to proceed with the removal work in an expeditious manner. While the roadway is closed to public traffic, work shall be pursued promptly and without interruption until the roadway is reopened to public traffic.

C. Bridge removal operations shall be performed during periods of time that the roadway is closed to public traffic except as specified herein for preliminary work.

D. Preliminary work shall be limited to operations that will not reduce the structural strength or stability of the bridge, or any element thereof, to a level that in the judgment of the Engineer would constitute a hazard to the public. This preliminary work shall also be limited to operations that cannot cause debris or any other material to fall onto the roadway. Protective covers may be used to perform preliminary work such as chipping or cutting the superstructure into segments, provided the covers are of sufficient strength to support all loads and are sufficiently tight to prevent dust and fine material from sifting down onto the traveled way. Protective covers shall extend at least 1.2 m beyond the limit of the work underway. Bottom slabs of box girders may be considered to be protective covers for preliminary work performed on the top slab inside the limits of the exterior girders.

E. Temporary support shoring and temporary bracing shall be used in conjunction with preliminary work when necessary to insure the stability of the bridge.

F. Temporary support shoring, temporary bracing, and protective covers shall not encroach closer than1.2 m horizontally from the edge or 4.6 m vertically above any traffic lane or shoulder that is open to public traffic.

G. During periods when the roadway is closed to public traffic, debris from bridge removal operations may be allowed to fall directly onto the lower roadway provided adequate protection is furnished for all highway facilities. The minimum protection for paved areas shall be a 0.6 m thick earthen pad or a 25-mm thick steel plate placed over the area where debris can fall. Prior to reopening the roadway to public traffic, all debris, protective pads, and devices shall be removed and the roadway swept clean with wet power sweepers or equivalent methods.

For bridge removal that requires the Contractor's Registered Engineer to prepare and sign the bridge removal plan, the Contractor's Registered Engineer shall be present at all times when bridge removal operations are in progress. The Contractor's Registered Engineer shall inspect the bridge removal operation and report in writing on a daily basis the progress of the operation and the status of the remaining structure. A copy of the daily report shall be available at the site of the work at all times. Should an unplanned event occur or the bridge operation deviate from the approved bridge removal plan, the Contractor's Registered Engineer shall submit immediately to the Engineer for approval, the procedure of operation proposed to correct or remedy the occurrence.

The Contractor's attention is directed to the existing reinforcement in the existing bridge overhang slab during bridge removal operation. Any damage to the existing deck transverse reinforcement resulting from the removal operation shall be repaired by the Contractor to its original condition or better. Any proposed remedial work to the damaged existing reinforcement in the overhang slab shall be approved by the Engineer before said work takes place.

Remedial work to the damaged existing reinforcement in the overhang slab performed by the Contractor, including furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in repairing the damaged existing reinforcement in the overhang slab shall be considered as included in the contract lump sum price paid for Bridge Removal (Portion) and no additional compensation will be allowed therefor.

ACCESS OPENING, SOFFIT

Access openings in bridge soffits shall consist of removing portions of existing box girder bridge soffits at the locations and to the dimensions shown on the plans.

A 19-mm deep saw cut shall be made around the perimeter of the soffit areas to be removed.

Bar reinforcing steel shall be removed as shown on the plans. The ends of the remaining bars shall be coated with 2 applications of a zinc-rich primer in the same manner specified for exposed ends of prestressing steel in Section 50-1.05, "Prestressing Steel" of the Standard Specifications.

Within a cell where work is to be performed, existing formwork and miscellaneous concrete that will interfere with the work shall be removed. In addition, when the work is to be done in a cell that adjoins an abutment, all existing forms and sharp projections in the cell between the abutment and 1.5 m past the access opening shall be removed.

All material removed shall become the property of the Contractor and shall be disposed of outside the highway right of way as provided in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

When no longer required, soffit access openings shall be closed as shown on the plans. All materials, including galvanized sheet metal covers, steel hardware, hinges, and corrosion resistant concrete expansion anchorage devices, shall be commercial quality.

Thread locking system shall conform to the provisions in Section 75, "Miscellaneous Metal" of the Standard Specifications.

Unless specified as an option, using deck access openings in lieu of soffit access openings will not be allowed.

Access openings through soffits will be measured and paid for by the unit as access opening, soffit. Openings to be paid for will be determined from actual count of the completed units in place.

The contract unit price paid for Access Ppening, Soffit shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the soffit access opening, complete in place, including closing the soffit access opening and removing forms

and miscellaneous concrete, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

REMOVE ASPHALT CONCRETE SURFACING

Existing asphalt concrete surfacing shall be removed to the top of existing Portland cement concrete slab at the bridge deckas shown on the plans and as described in these Special Provisions.

The Contractor shall verify the depth of asphalt concrete surfacing at a minimum of one location on each shoulder and one location in the traveled way every 30 meters. If the roadway surface is crowned, the depth shall be verified at the crown also.

The method of removal shall be selected by the Contractor. Equipment or procedures that damage the remaining concrete surface, as determined by the Engineer, shall not be used.

Cold milling equipment may be used to remove asphalt concrete surfacing, except that at least 13-mm of asphalt concrete surfacing shall remain on the deck after the cold milling operation. Removal of the remaining 13-mm of asphalt concrete surfacing shall be performed by other means as selected by the Contractor.

If the Contractor elects to use cold milling equipment, the cold milling equipment shall have the capability to 1) remove concrete a minimum depth of 6-mm, 2) provide a surface relief of no more than 6-mm, and 3) maintain a 4-mm grade tolerance; and shall have the following features:

A. 3 or 4 riding tracks.
B. An automatic grade control system with an electronic averaging system having 3 sensors on each side of the equipment.
C. A conveyer system that leaves no debris on the bridge.
D. A drum that operates in an up-milling direction.
E. Bullet tooth tools with tungsten carbide steel cutting tips.
F. A 16-mm maximum tool spacing.
G. A maximum operating mass of25400 kg.

The Contractor shall select which sensors are activated during the milling operation to produce the profile required as shown on the plans.

The cold milling equipment shall have a complete set of new tooth tools at the beginning of the job, and the tooth tools shall be replaced as necessary to perform the work satisfactorily.

The Contractor shall provide personnel on each side of the milling drum to monitor the milling operation and maintain radio communication with the operator at all times during the milling operation.

All removed materials shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

Remove asphalt concrete surfacing will be measured by the square meter.

The contract price paid per square meter for Remove Asphalt Concrete Surfacing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing asphalt concrete surfacing, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

PREPARE CONCRETE BRIDGE DECK SURFACE

This work shall consist of cleaning the Portland cement concrete deck surface by using steel shot-blasting and blowing clean the deck surface, as shown on the plans and as described in these Special Provisions.

All laitance and surface contaminants including, but not limited to, rust, oil, paint, joint material, and other foreign material shall be cleaned from the surface of the existing concrete deck.

If the surface becomes contaminated at any time prior to placing the primer for the overlay, the surface shall be cleaned by abrasive blasting.

Where abrasive blasting is being performed within 3 m of a lane occupied by public traffic, the residue including dust shall be removed immediately after contact between the abrasive and the surface being treated. Removal of the residue shall be performed by a vacuum attachment operating concurrently with the abrasive blasting operation.

Nothing in these Special Provisions shall relieve the Contractor from the responsibility to conform with the provisions in Section 7-1.09, "Public Safety" of the Standard Specifications.

Equipment shall be fitted with suitable traps, filters, drip pans, or other devices, as necessary, to prevent oil or other deleterious material from being deposited on the deck.

Equipment or procedures that leave fractured aggregate or otherwise damage the concrete surface which is to remain shall not be used.

All removed materials shall become the property of the Contractor and shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

Preparing concrete bridge deck surface will be measured by the square meter of surface which is prepared to receive the overlay, based on dimensions shown on the plans.

The contract price paid per square meter for Prepare Concrete Bridge Deck Surface shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the concrete bridge deck surface, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

REMOVE UNSOUND CONCRETE AND CONCRETE CURB & GUTTER

This work shall consist of the removal and disposal of unsound Portland cement concrete from the deck of the bridge. Unsound concrete and concrete curb and gutter shall be removed as shown on the plans and to the limits designated by the Engineer.

Unsound concrete is generally that concrete which emits a relatively dead or hollow sound when a chain is dragged over its surface or its surface is tapped with a metal tool. Concrete encasing corroded reinforcing steel beyond the limits identified by the sound may be considered as unsound concrete. The Engineer will determine the soundness of all concrete.

Equipment and tools shall not be used to remove unsound concrete which, in the opinion of the Engineer, cause the removal of excess quantities of sound concrete along with the unsound concrete. Equipment used shall be fitted with suitable traps, filters, drip pans, or other devices to prevent oil or other deleterious matter from being deposited on the deck.

After the removal of unsound concrete has been completed, any existing reinforcing steel which has been exposed shall be restored to position and blocked and tied in conformance with the provisions in Section 52, "Reinforcement" of the Standard Specifications.

Reinforcing steel that has been damaged to the extent that the steel's usefulness is destroyed as a result of the Contractor's operations, shall be repaired or replaced by the Contractor at the Contractor's expense.

Removing unsound concrete will be paid for at the contract price per cubic meter for remove unsound concrete.

Pay quantities determined by the methods of measurement specified in this section will not necessarily be equal to the quantities computed from the actual dimensions of the concrete actually removed. No allowance will be made in the event that the pay quantities do not equal the volume of concrete actually removed.

The contract prices paid per cubic meter for Remove Unsound Concrete and Remove Concrete (Curb and Gutter) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing unsound concrete in conformance with the details shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

10-1.53 LEAD COMPLIANCE PLAN

Section 7-1.07 applies if a bid item for a lead compliance plan is included in the Contract.

Prepare a work plan to prevent or minimize worker exposure to lead while managing and handling earth materials, paint system debris, traffic stripe residue, and pavement marking residue containing lead. Regulations containing specific Cal/OSHA requirements when working with lead include 8 CA Code of Regs § 1532.1.

The plan must contain the items listed in 8 CA Code of Regs § 1532.1(e)(2)(B). Before submittal, a CIH must sign and seal the plan. Submit the plan at least 7 days before starting any activity that presents the potential for lead exposure. The Engineer notifies you of the acceptability of the plan within 4 business days of receipt.

Before starting any activity that presents the potential for lead exposure to employees who have no prior training, including State employees, provide a safety training program to these employees that complies with 8 CA Code of Regs § 1532.1 and your lead compliance program.

Submit copies of air monitoring or job site inspection reports made by or under the direction of the CIH under 8 CA Code of Regs § 1532.1 within 10 days after the date of monitoring or inspection.

Supply personal protective equipment, training, and washing facilities required by your lead compliance plan for 5 State employees.

The contract lump sum price paid for Lead Compliance Plan shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing and implementing the plan as specified in this section.

10-1.54 MOBILIZATION:

Mobilization shall conform to the provisions in Section 11, "Mobilization" of the Standard Specifications.

Payment – Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be paid for on a lump sum basis and no additional compensation will be allowed therefor.

10-1.55 CLEARING AND GRUBBING:

Clearing and grubbing shall conform to the provisions in Section 16, "Clearing and Grubbing" of the Standard Specifications and these Special Provisions.

Vegetation shall be cleared and grubbed only within the excavation and embankment slope lines.

Vegetable growth from clearing and grubbing operations, except invasive species such as salt cedar/tamarisk, may be disposed of in embankments in conformance with the provisions in "Earthwork" of these Special Provisions.

Payment – Full compensation, except as otherwise provided herein, for conforming to the requirements of this article shall be paid for on a lump sum basis and no additional compensation will be allowed therefor.

10-1.56 DEVELOP WATER SUPPLY:

Develop water supply shall conform to the provisions of Section 17 of the Standard Specifications and these Special Provisions.

Full compensation for developing water supply and furnishing watering equipment shall be considered as included in the lump sum price paid for Develop Water Supply and no additional compensation will be allowed therefor.

Attention is directed to the requirements of Section 10, "Dust Control". Water in amounts specified by the Engineer will be used for dust control, and the cost thereof will be included in the lump sum price paid for develop Water Supply.

10-1.57 EARTHWORK:

Earthwork shall conform to the provisions in Section 19, "Earthwork" of the Standard Specifications and these Special Provisions.

Attention is directed to Section 5-1.02A, "Trench Excavation Safety Plans" of the Standard Specifications.

Structure backfill and roadway embankment within the specified limits of bridge abutments, as shown on the plans, shall conform to the requirements of low expansion material in addition to the provisions for structure backfill in Section 19-3.06, "Structure Backfill" of the Standard Specifications.

Low expansion materials are defined as having an Expansion Index (EI) less than 50 and a Sand Equivalent (SE) greater than 20. Expansion Index shall be determined in conformance with the requirements in ASTM D 4829. Sand Equivalent shall be determined in conformance with the requirements in California Test Method 217.

The compacted fill materials for the new embankment within the specified limits of bridge abutments shall have a minimum internal friction angle of 32 degrees and a minimum cohesion of 3.8 kPa. The fill within 3 m laterally from the slope face shall have a minimum cohesion of 9.6 kPa. Jetting or flooding to compact backfill materials shall not be allowed. Heavy compaction equipment, such as vibratory rollers, dozers, or loaders, shall not be used adjacent to the abutment walls and wingwalls.

Footings for retaining walls RW-18 and RW-50 shall be overexcavated to a depth of 1.5 m below the bottom of footing and to 1 m beyond each side of the footing. Native material at the bottom of the overexcavation and backfill material shall be compacted to a minimum 95 percent relative compaction. Prior to backfill, the exposed native material shall be proof-rolled with a mibratory pad-foot roller of minimum 18 tonnes dynamic force for a minimum of 6 passes.

All equipment and vehicles shall be thoroughly cleaned with water to remove dirt, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds before arriving or leaving the project site.

No greater than 20 days prior to importing material (including aggregate base or imported material for embankments or shoulder backing) to the project location from the proposed borrow site or stockpile, the Engineer will inspect the site or stockpile for the presence of noxious weeds or invasive plants. If noxious weeds or invasive plants are present, as determined by the Engineer, the Contractor shall remove 150-mm of the surface of the material from the site prior to transporting to the project.

Where a portion of the existing surfacing is to be removed, the outline of the area to be removed shall be cut on a neat line with a power-driven saw to a minimum depth of 50-mm before removing the surfacing. Full compensation for cutting the existing surfacing shall be considered as included in the contract price paid per cubic meter for roadway excavation and no additional compensation will be allowed therefor.

The portion of imported borrow placed within 1.5 m of the finished grade shall have a Resistance (R-Value) of not less than 50.

Material placed within 3.0 m of unpaved finished slope surfaces steeper than 1:4 (measured horizontally) shall have a minimum friction angle of 32 degrees, minimum cohesion of 9.6 kPa, fines content between 20 and 40 percent, and a minimum Plasticity Index of 12.

Reinforcement or metal attached to reinforced concrete rubble placed in embankments shall not protrude above the grading plane. Prior to placement within 0.6 m below the grading plane of embankments, reinforcement or metal shall be trimmed to no greater than 20-mm from the face of reinforced concrete rubble. Full compensation for trimming reinforcement or metal shall be considered as included in the contract prices paid per cubic meter for the types of excavation shown in the Engineer's estimate, or the contract prices paid for furnishing and placing imported borrow or embankment material, as the case may be, and no additional compensation will be allowed therefor.

Imported borrow shall be mineral material including rock, sand, gravel, or earth. The Contractor shall not use man-made refuse in imported borrow including:

A. Portland cement concrete.
B. Asphalt concrete.
C. Hot mix asphalt.
D. Material planed from roadway surfaces.
E. Residue from grooving or grinding operations.
F. Metal.
G. Rubber.
H. Mixed debris.
I. Rubble.

Imported borrow will be measured and paid for by the cubic meter and the quantity to be paid for will be computed in the following manner:

A. The total quantity of embankment will be computed in conformance with the provisions for roadway excavation in Section 19-2.08, "Measurement" of the Standard Specifications, on the basis of the planned or authorized cross section for embankments as shown on the plans and the measured ground surface.

B. The Contractor, at the Contractor's option, may compact the ground surface on which embankment is to be constructed before placing any embankment thereon. If the compaction results in an average subsidence exceeding 75-mm, the ground surface will be measured after completion of the compaction. The Engineer shall be allowed the time necessary to complete the measurement of an area before placement of embankment is started in that area.

C. The quantities of roadway excavation which have been used in the embankment, will be adjusted by multiplying by a grading factor to be determined in the field by the Engineer. No further adjustment will be made in the event that the grading factor determined by the Engineer does not equal the actual grading factor.

D. The quantity of imported borrow to be paid for will be that quantity remaining after deducting the adjusted quantities of excavation from the total embankment quantity and then adding a quantity of 1,450 cubic meters for the anticipated effect of subsidence. No adjustment will be made in the event that the anticipated subsidence does not equal the actual subsidence.

E. The Contractor may propose a plan whereby the Contractor would be paid on the basis of measured settlement in lieu of the allowance specified above. The proposal shall include complete details of the subsidence-measuring devices and a detailed plan of each installation. If the proposed plan is approved by the Engineer, the Contractor, at the Contractor's expense, shall provide, install and maintain the subsidence-measuring devices. The Engineer will take necessary readings to determine the progress of subsidence, if any, and the Contractor shall provide necessary assistance to make the readings.

F. Installed devices which are determined by the Engineer to have been damaged will not be used for the determination of subsidence for the area the devices represent in the pattern of approved installations. The subsidence of the area represented by that installation shall be considered zero, regardless of the subsidence measured at other installations.

G. The volumes required as a result of subsidence will be computed by the average-end-area method from the original measurements and the final measurements, including zero subsidence at all points and for all areas as provided herein. It shall be understood and agreed that the subsidence at the point of intersection of the side slopes (and end slopes at structures) with the ground line as established by the original cross sections shall be considered as zero. Unless otherwise agreed to by the Engineer, the subsidence shall be considered as zero at the points on the cross sections 15 m beyond the beginning and ending of the instrumented area. The computed volumes for such subsidence will be added to the quantities of embankment measured as specified herein.

H. Detachable elements of the subsidence-measuring devices which can be salvaged without damage to the work shall remain the property of the Contractor and shall be removed from the highway right of way after final measurements are made.

At the option of the Contractor, vegetable growth, excluding invasive species such as salt cedar/tamarisk, may be disposed of in embankment areas by Method I.

A. METHOD I:

1. Buried vegetable growth shall be placed outside of the 1:1 inclined plane sloping out and down from the outside edge of the shoulder of the planned roadbed, but not within 1.5 m of the finished slope line, measured normal to the slope.

2. Brush and debris shall be mixed with not less than 50 percent earth and placed in uniform layers.

3. No material shall be disposed of where the material will interfere with planned work.

B. METHOD II:

1. Buried vegetable growth shall be placed at least 4.5 m beneath the grading plane, at least 3 m from the surface of any embankment slope, and at least 2.0 m horizontally from and not beneath any planned structures, including but not limited to: abutments, walls, footings, foundations, piles, drainage structures and utility installations.

2. Brush, grass, weeds, slash, and limbs or logs under 100-mm in diameter shall be chipped and placed on the completed embankment slopes and mixed with the underlying earth to such extent that the vegetable growth will not support combustion.

Regardless of the method utilized, vegetable growth shall not be buried in areas where less than 10 percent of the embankment material passes a 75-μm sieve, nor in areas where the plans prohibit burying vegetable growth. Downed trees shall be separated into stumps and logs. Stump roots shall be trimmed to within 0.6 m of the trunk and then the trunks placed vertically in the embankment and spaced so that compaction equipment can readily pass between them. Logs and trimmed branches shall be laid parallel to each other and at least 0.3 m apart. Each single layer of stumps, logs, and branches shall be covered with at least 1.0 m of compacted embankment material.

Full compensation for disposing of vegetable growth in embankment areas shall be considered as included in the contract lump sum price paid for Clearing And Grubbing and no additional compensation will be allowed therefor.

Weep hole and geocomposite drain at retaining walls, and abutment tieback walls shall conform to the details shown on the plans and the following:

A. Attention is directed to "Engineering Fabrics" under "Materials" of these Special Provisions.

B. Geocomposite drain shall consist of a manufactured core not less than 6.35-mm thick nor more than 50-mm thick with one or both sides covered with a layer of filter fabric that will provide a drainage void. The drain shall produce a flow rate, through the drainage void, of at least 25 liters per minute per meter of width at a hydraulic gradient of 1.0 and a minimum externally applied pressure of 168 kPa.

C. A Certificate of Compliance conforming to the provisions in Section 6-1.07, "Certificates of Compliance" of the Standard Specifications shall be furnished for the geocomposite drain certifying that the drain produces the required flow rate and complies with these Special Provisions. The Certificate of Compliance shall be accompanied by a flow capability graph for the geocomposite drain showing flow rates for externally applied pressures and hydraulic gradients. The flow capability graph shall be stamped with the verification of an independent testing laboratory.

D. Filter fabric for the geocomposite drain shall conform to the provisions for fabric for underdrains in Section 88, "Engineering Fabrics" of the Standard Specifications.

E. The manufactured core shall be either a preformed grid of embossed plastic, a mat of random shapes of plastic fibers, a drainage net consisting of a uniform pattern of polymeric strands forming 2 sets of continuous flow channels, or a system of plastic pillars and interconnections forming a semirigid mat.

F. The core material and filter fabric shall be capable of maintaining the drainage void for the entire height of geocomposite drain. Filter fabric shall be integrally bonded to the side of the core material with the drainage void. Core material manufactured from impermeable plastic sheeting having nonconnecting corrugations shall be placed with the corrugations approximately perpendicular to the drainage collection system.

G. The geocomposite drain shall be installed with the drainage void and the filter fabric facing the embankment. The fabric facing the embankment side shall overlap a minimum of 75-mm at all joints and wrap around the exterior edges a minimum of 75-mm beyond the exterior edge. If additional fabric is needed to provide overlap at joints and wrap-around at edges, the added fabric shall overlap the fabric on the geocomposite drain at least 150-mm and be attached thereto.

H. Should the fabric on the geocomposite drain be torn or punctured, the damaged section shall be replaced completely or repaired by placing a piece of fabric that is large enough to cover the damaged area and provide a minimum 150-mm overlap.

I. Plastic pipe shall conform to the provisions for edge drain pipe and edge drain outlets in Section 68-3, "Edge Drains" of the Standard Specifications.

If structure excavation or structure backfill for bridges is not otherwise designated by type and payment for the structure excavation or structure backfill has not otherwise been provided for in the Standard Specifications or these Special Provisions, the structure excavation or structure backfill will be measured and paid for as Structure Excavation (Bridge) or Structure Backfill (Bridge), respectively.

Full compensation for conforming to the low expansion index, plasticity index, friction angle, fines content, and cohesion requirements shall be considered as included in the contract prices paid for the various contract items of work and no additional compensation will be allowed therefor.

Full compensation for overexcavation and recompaction of material beneath and adjacent to retaining wall footings shall be considered as included in the contract prices paid per cubic meter for Structure Excavation (Retaining wall) and Structure Backfill (Retaining wall) and no additional compensation will be allowed.

Full compensation for cleaning earthwork equipment and controlling noxious weeds in borrow sites and stockpiles shall be considered as included in the contract prices paid for the various contract items of work and no additional compensation will be allowed therefor.

10-1.58 EARTHWORK - TIEBACK WALL:

This work shall consist of excavating for tieback wall construction, and backfilling around completed tieback wall in conformance with the details shown on the plans, the provisions in Section 19-3, "Structure Excavation and Backfill" of the Standard Specifications, and these Special Provisions.

Working Drawings

The Contractor shall submit a complete working drawing submittal for earthwork for each tieback wall to the Offices of Structure Design in conformance with the provisions in Section 5-1.02, "Plans and Working Drawings" of the Standard Specifications. Working drawings shall be 559-mm x 864-mm in size. For initial review, 5 sets of drawings shall be submitted. After review, between 6 and 12 sets, as requested by the Engineer, shall be submitted to Offices of Structure Design for final approval and use during construction.

Working drawing submittals for tieback wall earthwork shall show the contract number, structure number, full name of the structure as shown on the project plans, and District-County-Route-Post Mile on each drawing and calculation sheet. The Contractor's name, address, and telephone and fax numbers shall be shown on the working drawings. Each sheet shall be numbered in the lower right hand corner.

The working drawing submittal for tieback wall earthwork shall contain all information required for the construction and quality control of the earthwork, including the following:

A. A proposed schedule and detailed construction sequence. The construction sequence shall include measures to ensure wall, existing bridge abutments and slope stability during all stages of wall construction, including provisions for installation of verification and proof test tieback anchors and discontinuous rows and columns of tieback anchors.

B. Methods of excavation to the staged lifts and horizontal stages within the same lift indicated and types of excavation equipment.

C. Exposed vertical soil lift height and proposed maximum duration of exposure for each wall zone, including supporting calculations, and provisions for stabilization of the exposed soil face.

D. Details for the monitoring system for wall deflection.

E. Information on space requirements for installation equipment.

F. A detailed construction dewatering plan addressing all elements necessary to divert, control, and dispose of surface water and ground water.

G. Proposed locations for wall construction joints.

The working drawings shall be stamped and signed by an Engineer who is registered as a Civil Engineer in the State of California.

The Contractor shall allow the Engineer 4 weeks to review the working drawings after a complete submittal has been received.

Should the Engineer fail to review the complete working drawing submittal within the time specified and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the tieback anchors earthwork working drawing submittal, an extension of time commensurate with the delay in completion of the work thus caused will be granted in conformance with the provisions in Section 8-1.09, "Right of Way Delays" of the Standard Specifications.

Construction

Excavation for tieback walls shall not expose natural foundation material for more than 24 hours without soil stabilization or temporary shoring, prior to placing shotcrete.

Contractor is advised that the in-situ soils are granular and cohesionless. Caving soils are expected to be encountered. At the Contractor's option and own expense, ground stabilization measures proposed by the Contractor and approved by the Engineer may be required to allow vertical soil cuts to reach the required lift height shown on the plans.

No excavation or drilling for installation of production tieback anchors will be permitted in any wall zone until verification tieback anchor testing have been completed in that wall zone, and the test results have been approved by the Engineer.

Excavation for tieback anchors installation shall proceed from the top down in a staged lift sequence as shown on the approved wall earthwork working drawings.

The complete excavated face shall be cleaned of all loose materials, mud, rebound, and other materials that could prevent or reduce shotcrete bond to the excavated face and tieback anchors.

The Contractor shall remove all cobbles, boulders or portions of boulders, rubble, or debris that are encountered at the final wall alignment during wall face excavation and that protrude from the excavated face more than 50-mm into the design shotcrete thickness as shown on the plans. Such over excavation shall be backfilled with shotcrete.

The Contractor shall immediately notify the Engineer of the occurrence of raveling or local instability of the final wall face excavation or a horizontal movement of the wall face exceeding 0.4 percent of the total excavated wall height.

Unstable areas shall be temporarily stabilized by means of buttressing the exposed excavation face with an earth berm or other methods approved in writing by the Engineer. Construction of the wall in unstable areas shall be suspended until remedial measures, submitted by the Contractor and approved by the Engineer, have been taken.

The Contractor shall protect installed tieback anchors during excavation and subsequent operations. Damaged tieback anchors shall be replaced by the Contractor, at the Contractor's expense.

The Contractor shall complete tieback anchors construction and application of shotcrete wall facing in conformance with the construction sequence in the approved wall earthwork working drawings.

Where the Contractor's excavation and installation methods result in a discontinuous wall along any tieback anchors row, the ends of the structurally completed wall section shall extend beyond the ends of the next lower excavation lift by a distance equal to twice the lift height. The Contractor shall maintain temporary slopes at the ends of each wall section to ensure slope stability.

No excavation shall proceed to the next underlying excavation lift until the portion of wall in the current excavation lift is structurally complete. A portion of tieback wall shall be considered structurally complete when:

A. Tieback anchor construction has been completed.
B. Reinforced shotcrete facing has been constructed.
C. Tieback anchor grout and shotcrete facing have been cured for at least 72 hours or have attained a minimum compressive strength of 28 MPa.
D. The tieback anchor facing anchorage has been attached.
E. The representative tieback anchor tests have been completed for that portion of wall.
F. The tieback anchor test results have been approved in writing by the Engineer.

Excavation and backfill for tieback wall construction will be measured and paid for as Structure Excavation (Tieback Wall) and Structure Backfill (Tieback Wall).

Full compensation for furnishing, constructing, and removing working and stabilizing berms for tieback wall construction shall be considered as included in the contract price paid per cubic meter for Structure Excavation (Tieback Wall), and no additional compensation will be allowed therefor.

Full compensation for shotcrete used to fill voids created by the removal of cobbles and boulders or other obstructions shall be considered as included in the contract price paid per cubic meter for Shotcrete and no additional compensation will be allowed therefor.

10-1.59 CONTROLLED LOW STRENGTH MATERIAL:

Controlled low strength material shall consist of a workable mixture of aggregate, cementitious materials, and water and shall conform to the provisions for slurry cement backfill in Section 19-3.062, "Slurry Cement Backfill" of the Standard Specifications and these Special Provisions.

At the option of the Contractor, controlled low strength material may be used as structure backfill for pipe culverts, except that controlled low strength material shall not be used as structure backfill for culverts having a diameter or span greater than 6.1 m.

When controlled low strength material is used for structure backfill, the width of the excavation shown on the plans may be reduced so that the clear distance between the outside of the pipe and the side of the excavation, on each side of the pipe, is a minimum of 300-mm. This minimum may be reduced to 150-mm when the height of cover is less than or equal to 6.1 m or the pipe diameter or span is less than 1050-mm.

Controlled low strength material in new construction shall not be permanently placed higher than the basement soil. For trenches in existing pavements, permanent placement shall be no higher than the bottom of the existing pavement permeable drainage layer. If a drainage layer does not exist, permanent placement in existing pavements shall be no higher than 25-mm below the bottom of the existing asphalt concrete surfacing or no higher than the top of base below the existing Portland cement concrete pavement. The minimum height that controlled low strength material shall be placed, relative to the culvert invert, is 0.5 diameter or 0.5 height for rigid culverts and 0.7 diameter or 0.7 height for flexible culverts.

When controlled low strength material is proposed for use, the Contractor shall submit a mix design and test data to the Engineer for approval prior to excavating the trench for which controlled low strength material is proposed for use. The test data and mix design shall provide for the following:

A. A 28-day compressive strength between 345 kPa and 690 kPa for pipe culverts having a height of cover of 6.1 m or less and a minimum 28-day compressive strength of 690 kPa for pipe culverts having a height of cover greater than 6.1 m. Compressive strength shall be determined in conformance with the requirements in ASTM Designation: D 4832.

B. Cement shall be any type of Portland cement conforming to the requirements in ASTM Designation: C 150; or any type of blended hydraulic cement conforming to the requirements in ASTM Designation: C 595M or the physical requirements in ASTM Designation: C 1157M. Testing of cement will not be required.

C. Admixtures may be used in conformance with the provisions in Section 90-4, "Admixtures" of the Standard Specifications. Chemical admixtures containing chlorides as Cl in excess of one percent by mass of admixture, as determined in conformance with the requirements of California Test 415, shall not be used. If

an air-entraining admixture is used, the maximum air content shall be limited to 20 percent. Mineral admixtures shall be used at the Contractor's option.

Materials for controlled low strength material shall be thoroughly machine-mixed in a pugmill, rotary drum or other approved mixer. Mixing shall continue until the cementitious material and water are thoroughly dispersed throughout the material. Controlled low strength material shall be placed in the work within 3 hours after introduction of the cement to the aggregates.

When controlled low strength material is to be placed within the traveled way or otherwise to be covered by paving or embankment materials, the material shall achieve a maximum indentation diameter of 76-mm prior to covering and opening to public traffic. Penetration resistance shall be measured in conformance with the requirements in ASTM Designation: D 6024.

Controlled low strength material used as structure backfill for pipe culverts will be considered structure backfill for compensation purposes.

10-1.60 MOVE-IN/MOVE-OUT (EROSION CONTROL):

Move-in/Move-out (Erosion Control) shall include moving onto the project when an area is ready to receive erosion control as determined by the Engineer, setting up all required personnel and equipment for the application of erosion control materials and moving out all personnel and equipment when erosion control in that area is completed.

When areas are ready to receive applications of erosion control (Hydroseed), as determined by the Engineer, the Contractor shall begin erosion control work in that area within 5 working days of the Engineer's notification to perform the erosion control work.

Quantities of move-in/move-out (Erosion Control) will be determined as units from actual count as determined by the Engineer. For measurement purposes, a move-in followed by a move-out will be considered as one unit.

The contract unit price paid for Move-In/Move-Out (Erosion Control) shall include full compensation for furnishing all labor, materials (excluding erosion control materials), tools, equipment, and incidentals and for doing all the work involved in moving in and removing from the project all personnel and equipment necessary for application of erosion control (Hydroseed), as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

No adjustment of compensation will be made for any increase or decrease in the quantities of move-in/move-out (Erosion Control) required, regardless of the reason for the increase or decrease. The provisions in Section 4-1.03B, "Increased or Decreased Quantities" of the Standard Specifications shall not apply to the item of move-in/move-out (Erosion Control).

10-1.61 EROSION CONTROL (HYDROSEED):

GENERAL

Summary

This work includes removing and disposing of weeds, applying erosion control materials, seed, fiber and tackifier to erosion control (Hydroseed) areas shown on the plans.

Comply with Section 20-3, "Erosion Control" of the Standard Specifications.

Apply erosion control (Hydroseed) when an area is ready to receive erosion control as determined by the Engineer and under "Move-In/Move-Out (Erosion Control)" of these Special Provisions.

The Engineer will designate the ground location of all erosion control (Hydroseed) areas in increments of one acre or smaller by directing the placing of stakes or other suitable markers. Furnish all tools, labor, materials, and transportation required to adequately indicate the various erosion control (Hydroseed) locations.

MATERIALS

Seed

Seed not required to be labeled under the California Food and Agricultural Code must be tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts or by a seed technologist certified by the Society of Commercial Seed Technologists. Measure and mix individual seed species in the presence of the Engineer.

Seed must contain at most 1.0 percent total weed seed by weight.

Seed must be free of the following specific weed species: Salt Cedar/Tamarisk.

Deliver seed to the job site in unopened separate containers with the seed tag attached. Containers without a seed tag attached are not accepted. The Engineer takes a sample of approximately 30 g or 60 ml of seed for each seed lot greater than 1 kg.

Legume seed must comply with the following:

Legume Seed

Botanical Name (Common Name)	Percent Germination (Minimum)	Pounds Pure Live Seed Per Hectare (Slope Measurement)
Lotus rigidus (Shrubby Deervetch)	30	3.0
Lupinus arizonicus (Arizona lupine)	40	3.0
	Total	6.0

Non-legume seed must comply with the following:

Non-Legume Seed

Botanical Name (Common Name)	Percent Germination (Minimum)	Kilograms Pure Live Seed Per Hectare (Slope Measurement)
Ambrosia dumosa (Burro-weed)	25	4.0
Aristida adscensionis (Six-weeks three-awn)	30	3.0
Baileya pleniradiata (Wooly marigold)	0	2.0
Cammisonia californica (California evening primrose)	25	2.0
Oenothera deltoids (Dune primrose)	20	2.0
Helianthus niveus (Dune sunflower)	40	5.0
Helianthus annuus (Common sunflower)	40	5.0
	Total	23.0

Seed Sampling Supplies

At the time of seed sampling, provide the Engineer a glassine lined bag and custody seal tag for each seed lot sample.

Tackifier

Tackifier must be:

A. Guar (Plant Based).
B. Psyllium (Plant Based).
C. Starch (Plant Based).

Tackifier must comply with the following:

A. Nonflammable.
B. Nontoxic to aquatic organisms.
C. Free from growth or germination inhibiting factors.

Tackifier classified as a plant based product must comply with the following:

A. A natural high molecular weight polysaccharide.
B. A high viscosity hydrocolloid that is miscible in water.
C. Functional for at least 180 days.
D. Labeled as either guar, psyllium, or starch.

Guar:

A. A guar gum based product derived from the ground endosperm of the guar plant, cyanmopsis tetragonolobus.
B. Treated with dispersant agents for easy mixing.
C. Able to be diluted at the rate of 1 to 5 pounds per 100 gallons of water.

Psyllium:

A. Made of the finely ground muciloid coating of plantago ovata or plantago ispaghula seeds.
B. Able to dry and form a firm but rewettable membrane.

Starch:

A. A non-ionic, water-soluble granular material derived from corn, potato, or other plant-based source.

Fiber

Fiber must be:

A. Wood.
B. Cellulose.
C. Alternate.
D. A combination of Wood, Cellulose, or Alternate.

Fiber must comply with the following:

A. Free from lead paint, printing ink, varnish, petroleum products, seed germination inhibitors, or chlorine bleach.
B. Free from synthetic or plastic materials.
C. At most 7 percent ash.

Wood Fiber must comply with the following:

A. Long strand, whole wood fibers, thermo-mechanically processed from clean, whole wood chips.
B. Not made from sawdust, cardboard, paper, or paper byproducts.
C. At least 25 percent of fibers 3/8 inch long.
D. At least 40 percent held on a No. 25 sieve.

Cellulose Fiber must comply with the following:

A. Made from natural or recycled pulp fiber, such as wood chips, sawdust, newsprint, chipboard, corrugated cardboard, or a combination of these materials.

Alternate Fiber must comply with the following:

A. Long strand, whole natural fibers made from clean straw, cotton, corn, or other natural feed stock.
B. At least 25 percent of fibers 3/8 inch long.
C. At least 40 percent held on a No. 25 sieve.

Coloring Agent

Use a biodegradable, nontoxic coloring agent free from copper, mercury, and arsenic.

CONSTRUCTION

Site Preparation

Immediately prior to applying seed to erosion control (Hydroseed) areas, trash and debris and weeds must be removed.

Removed weeds must be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

Application

Apply erosion control (Hydroseed) materials in separate applications in the following sequence:

A. Apply the following mixture with hydroseeding equipment at the rates indicated within 60 minutes after the seed has been added to the mixture:

Material	Kilograms Per Acre (Slope Measurement)
Seed	29
Fiber	800

B. Apply the following mixture with hydro-seeding equipment at the corresponding rates:

Material	Kilograms Per Acre (Slope Measurement)
Fiber	800
Tackifier	140

The ratio of total water to total tackifier in the mixture must be as recommended by the manufacturer.

Seed may be dry applied at the total rate specified in the preceding table for small areas not accessible by the hydro-seeding equipment, when approved in writing by the Engineer. Dry applied seed must be incorporated into the soil a maximum depth of 6-mm by raking or dragging.

Hydraulic application of erosion control (Hydroseed) materials for rolled erosion control product (Netting) areas must be applied by hose, from the ground. Erosion control (Hydroseed) materials must be applied onto the slope face such that the materials are well integrated into the rolled erosion control product (Netting) and in contact with ground surface. Application must be perpendicular to the slope face such that rolled erosion control product (Netting) materials are not damaged or displaced.

The Engineer may change the rates of erosion control (Hydroseed) materials to meet field conditions.

For any area where erosion control (Hydroseed) materials are to be applied, the application of all erosion control (Hydroseed) materials to be applied to that area must be completed within 72 hours from when the first materials were applied.

MEASUREMENT AND PAYMENT

The contract price paid per square meter for Erosion Control (Hydroseed) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in erosion control (Hydroseed) complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

10-1.62 FIBER ROLLS:

Fiber rolls shall be furnished and installed in conformance with details shown on the plans and these Special Provisions and as directed by the Engineer.

At the option of the Contractor, fiber rolls shall be Type 1 or Type 2.

MATERIALS

Fiber Roll

Fiber roll shall be either:

A. Constructed with a premanufactured blanket consisting of either wood excelsior, rice or wheat straw, or coconut fibers or a combination of these materials. The blanket shall be between 2.0 m and 2.4 m in width and between 20 m and 29 m in length. Wood excelsior shall be individual fibers, of which 80 percent shall be 150-mm or longer in length. The blanket shall have a

photodegradable plastic netting or biodegradable jute, sisal, or coir fiber netting on at least one side. The blanket shall be rolled along the width and secured with jute twine spaced 2 m apart along the full length of the roll and placed 150-mm from the ends of each roll. The finished roll shall be between 200-mm and 250-mm in diameter, a minimun of 6 m in length, and shall weigh at least 0.81-kg/m. More than one blanket may be required to achieve the finished roll diameter. When more than one blanket is required, blankets shall be jointed longitudinally with an overlap of 150-mm along the length of the blanket.

B. A premanufactured roll of rice or wheat straw, wood excelsior, or coconut fiber encapsulated within a photodegradable plastic or biodegradable jute, sisal, or coir fiber netting. The netting shall have a minimum durability of one year after installation. The netting shall be secured tightly at each end of the roll. Rolls shall be between 200-mm and 300-mm in diameter. Rolls between 200-mm and 250-mm in diameter shall have a minimum weight of 1.6 kg/m and a minimum length of 6 m. Rolls between 250-mm and 300-mm in diameter shall have a minimum weight of 4.5 kg/m and a minimum length of 3 m.

Stakes

Wood stakes shall be a minimum of 19-mm x 19-mm x 450-mm in size for Type 1 installation, or a minimum of 19-mm x 38-mm x 450-mm in size for Type 2 installation. Wood stakes shall be untreated fir, redwood, cedar, or pine and cut from sound timber. They shall be straight and free of loose or unsound knots and other defects which would render them unfit for the purpose intended. Metal stakes shall not be used.

Rope

Rope shall be biodegradable, such as sisal or manila, with a minimum diameter of 6.35-mm.

INSTALLATION

Fiber rolls shall be installed as follows:

A. Fiber rolls (Type 1): Furrows shall be constructed to a depth between 50-mm and 100-mm, and to a sufficient width to hold the fiber roll. Stakes shall be installed 600-mm apart along the length of the fiber rolls and stopped at 300-mm from each end of the rolls. Stakes shall be driven to a maximum of 50-mm above, or flush with the top of the roll.

B. Fiber rolls (Type 2): Rope and notched stakes shall be used to restrain the fiber rolls against the slope. Stakes shall be driven into the slope until the notch is even with the top of the fiber roll. Rope shall be knotted at each stake and laced between stakes. After installation of the rope, stakes shall be driven into the slope such that the rope will hold the fiber roll tightly to the slope. Furrows will not be required.

C. Fiber rolls shall be placed as shown on the plans.

D. The bedding area for the fiber rolls shall be cleared of obstructions including rocks, clods, and debris greater than 25-mm in diameter before installation.

E. Fiber rolls shall be installed approximately parallel to the slope contour.

F. Fiber rolls shall be installed before the application of other erosion control or soil stabilization materials in the same area.

If the intended function of the fiber rolls to disperse concentrated water runoff and to reduce runoff velocities is impaired, the Contractor shall take action to repair or replace the fiber rolls. Split, torn, or unraveling rolls shall be repaired or replaced. Broken or split stakes shall be replaced. Sagging or slumping fiber rolls shall be repaired with additional stakes or replaced. Locations where rills and other evidence of concentrated runoff have occurred beneath the rolls shall be corrected. Fiber rolls shall be repaired or replaced within 24 hours of identifying the deficiency.

MEASUREMENT AND PAYMENT

Quantities of fiber rolls to be paid for will be determined by the meter measured along the centerline of the installed roll. Where fiber rolls are joined and overlapped, the overlap will be measured as a single installed roll.

The contract price paid per meter for Fiber Roll shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in installing fiber rolls, complete in place, including furrow excavation and backfill, repairing or replacing fiber rolls as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

Damage to fiber rolls resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

10-1.63 IRRIGATION CROSSOVERS:

Irrigation crossovers shall conform to the provisions in Section 20-5, "Irrigation Systems" of the Standard Specifications and these Special Provisions.

Conduits shall be placed in open trenches in conformance with the provisions in Section 20-5.03B, "Conduit for Irrigation Crossovers" of the Standard Specifications.

Conduits shall be corrugated high density polyethylene (CHDPE) pipe. Corrugated high density polyethylene pipe shall conform to the requirements in ASTM Designation: F 405 or F 667, or AASHTO Designation: M 252 or M 294 and shall be Type S. Couplings and fittings shall be as recommended by the pipe manufacturer.

Water line crossovers shall conform to the provisions in Section 20-5.03C, "Water Line Crossovers" of the Standard Specifications.

Installation of pull boxes shall conform to the provisions in Section 20-5.027I, "Conductors, Electrical Conduit and Pull Boxes" of the Standard Specifications. When no conductors are installed in electrical conduits, pull boxes for irrigation crossovers shall be installed on a foundation of compacted soil.

Payment – The contract unit bid price paid per meter for Corrugated High Density Polyethylene Pipe Conduit shall include full compensation for furnishing all labor, tools, materials, equipment, and incidentals, and for doing all the work involved and complete in place including excavation and backfill and no additional compensation will be allowed therefor.

10-1.64 GRAVEL MULCH:

This work includes furnishing and placing gravel mulch, including site preparation, earthwork, edging, soil treatment, and landscape fabric, in conformance with the Standard Specifications, these Special Provisions and as directed by the Engineer.

MATERIALS

Edging

Edging must be commercial quality, made of aluminum, and have an L-shape design. Edging must be a minimum 100-mm in height. Thickness must be as recommended by the manufacture for commercial installation of the use intended. Edging must be anchored with steel spikes or stakes, whichever is provided by the manufacturer of the edging. Spike or stake size and spacing must be per edging manufacturer's specifications for use and site conditions. Furnish the Engineer a copy of the manufacturers product sheets together with instructions for installation 5 days before application.

Landscape Fabric

Landscape fabric must be either:

A. Manufactured from thermally spun bonded polyester fabric and must conform to the following:

Specification	Minimum Requirement
Tensile Strength	0.5 Kilonewtons
Permeability	12,000 l/m^2/minute
UV Resistance	70% @ 150 hours
Mass	118 g/m^2

Specification	Requirement
Minimum Grab Tensile Strength, Kilonewtons ASTM Designation: D 4632	0.53
Roll Width, meters, min.	4
Area/Roll, square meters, min.	200
Open Area, percent	63-70

B. Manufactured from thermally spun bonded polypropylene fabric and must conform to the following:

Specification	Minimum Requirement
Grab Tensile Strength	0.6 Kilonewtons
Grab Elongation	70%
UV Resistance	70% @ 150 hours
Mass	102 g/m^2

Staples must be 50-mm wide, 200-mm in length, and 2.3-mm wire.

Furnish the Engineer a copy of the manufacturer's product sheet together with instructions for installation 5 days before installation.

Submit a Certificate of Compliance for the landscape fabric to the Engineer under Section 6-1.07, "Certificates of Compliance" of the Standard Specifications.

Gravel

Gravel designated as 75-mm must consist of rock or crushed rock and must conform to the following requirements:

Grading Requirements

Sieve Size	Percent Passing
100-mm	100
75-mm	90-100
19-mm	10-25

Gravel designated as 19-mm must consist of crushed rock and must conform to the following requirements:

Grading Requirements

Sieve Size	Percent Passing
19-mm	100
9.5-mm	50-85
4.75-mm	10-40
150-μm	2-9

Gravel mulch placed within 9 meters of the I-10 travelled way or the travelled way on ramps and local roads shall conform to the 19-mm grading, except where placement is behind metal beam guard rail.

The color of gravel must be "Burnished Bronze" or "Pale Sunset" as defined by Southwest Boulder and Stone, 67-625 Canyon Plaza, Cathedral City, CA 92234 (760-328-5877).

The Contractor must submit a two kilogram sample of each size of gravel to the Engineer for approval before delivery of materials to the site.

SITE PREPARATION

Clearing

Prior to gravel mulch installation, the areas must be cleared as specified under "Clearing and Grubbing" in these Special Provisions.

Earthwork

Earthwork must conform to the provisions in Section 19, "Earthwork" of the Standard Specifications and these Special Provisions.

After clearing, excavate the areas to receive gravel mulch, grade to a smooth surface, and compact to not less than 80 percent relative compaction.

Soil Treatment

Following excavation and compaction, scarify the subbase for gravel mulch to a minimum depth of 75-mm. Remove and dispose rocks, large clods of earth, roots, weeds, and other debris greater than one inch in diameter.

Bring the loosened material to as finely a divided condition as the material will permit. The soil surface must be firm and stable.

PLACEMENT

Install edging to delineate the limits of the gravel mulch as specified in these Special Provisions. Edging will not be required between gravel mulch areas and the adjacent face of soundwalls, pavement edges, or rock blanket areas.

Place landscape fabric in areas to receive gravel mulch as recommended by the manufacturer and as specified in these Special Provisions. Place landscape fabric loosely with longitudinal and transverse joints overlapped 100-mm and staple to the subgrade at 150-mm on center. Drive staples perpendicular to the ground surface. Following placement, the fabric must layflat, smooth and be in uniform contact with the soil surface, without bulges or wrinkles.

Spread and compact aggregate base under Section 26-1.04, "Spreading" and Section 26-1.05, "Compacting" of the Standard Specifications.

Place gravel mulch as a single layer with a thickness equal to the nominal size of the specified material, either 19-mm or 75-mm.

When placement is complete the surface must be uniform, maintain original flow lines, slope gradient and contours of the project site.

MEASUREMENT AND PAYMENT

Gravel mulch will be measured by the square meter as determined from actual measurements made parallel to the ground slope.

The contract unit price paid per square meter for Gravel Mulch includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in providing and placing gravel mulch, complete in place, including site preparation, earthwork, soil treatment, landscape fabric, aggregate base, and edging, as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

10-1.65 AGGREGATE BASE:

Aggregate base must comply with Section 26, "Aggregate Bases" of the Standard Specifications and these Special Provisions.

Aggregate base must be Class 2.

Do not store reclaimed asphalt concrete or aggregate base with reclaimed asphalt concrete within 30 m measured horizontally of any culvert, watercourse, or bridge.

Payment – The contract unit bid price paid per cubic meter for Class 2 Aggregate Base shall include full compensation for furnishing all labor, tools, materials, equipment, and incidentals, and for doing all the work involved and complete in place and no additional compensation will be allowed therefor.

10-1.66 LEAN CONCRETE BASE:

Lean concrete base shall conform to the provisions in Section 28, "Lean Concrete Base" of the Standard Specifications and these Special Provisions.

The finished surface of lean concrete base shall not be above the grade established by the Engineer, or more than 15-mm below the grade established by the Engineer.

Payment – The contract unit bid price paid per cubic meter for Lean Concrete Base shall include full compensation for furnishing all labor, tools, materials, equipment, and incidentals, and for doing all the work involved and complete in place and no additional compensation will be allowed therefor.

10-1.67 SLURRY SEAL:

Slurry seal shall conform to the provisions in Section 37-2, "Slurry Seal" of the Standard Specifications and these Special Provisions.

The aggregate for slurry seal shall be Type II.

Polymer modified asphaltic emulsion shall be composed of a bituminous material uniformly emulsified with water and an emulsifying or stabilization agent and shall contain a polymer.

The polymer used in the manufacture of polymer modified asphaltic emulsions shall be at the option of the Contractor, either neoprene, or a copolymer of butadiene and styrene. The polymer used in the polymer modified asphaltic emulsion shall be homogenous and shall be milled into the product at the colloid mill.

The polymer modified asphaltic emulsion shall be Grade PMCQS1h and shall conform to the following requirements:

Type	Cationic	
Grade	PMCQS1h	
Properties	Min.	Max
Tests on Emulsion:		
Viscosity SSF @ 25°C, sec	15	90
AASHTO Designation: T 59		
Sieve Test, %	—	0.30
AASHTO Designation T 539		
Storage Stability, 1 day, %	—	1
AASHTO Designation: T 59		
Residue by Evaporation, %	57	—
California Test 331		
Particle Charge	Positive	
AASHTO Designation: T 59		
Tests on Residue from Evaporation Test		
Penetration, 25°C	40	90
AASHTO Designation: T 49		
Ductility, 25°C, mm	400	—
AASHTO Designation: T 51		
Torsional Recovery, %	18	—
California Test 332		
or		
Polymer Content, %	2.5	—
California Test 401		

Note:

When the test for polymer content of polymer modified asphaltic emulsion is used, see sampling requirements in Section 94-1.03, "Sampling" of the Standard Specifications.

10-1.68 HOT MIX ASPHALT (TYPE A):

GENERAL

Summary

This work includes producing and placing hot mix asphalt (HMA) Type A using the Method process.

Comply with Section 39, "Hot Mix Asphalt" of the Standard Specifications.

MATERIALS

Asphalt Binder

The grade of asphalt binder mixed with aggregate for HMA Type A must be PG 64-16.

Aggregate

The aggregate for HMA Type A must comply with the 9.5-mm grading.

Antistrip Treatment

Treat aggregate with lime slurry under "Hot Mix Asphalt Aggregate Lime Treatment – Slurry Method" and use Lab Procedure LP-7 for the mix design.

10-1.69 HOT MIX ASPHALT (TYPE C):

GENERAL

Summary

This work includes producing and placing hot mix asphalt (HMA) Type C using the Quality Control / Quality Assurance process.

Comply with the specifications for HMA Type A under Section 39, "Hot Mix Asphalt" of the Standard Specifications.

Submittals

With the job mix formula (JMF) submittal, submit:

A. California Test 204 plasticity index results.
B. California Test 371 tensile strength ratio results for untreated HMA.
C. California Test 371 tensile strength ratio results for treated HMA if untreated HMA tensile strength ratio is below 70.

At project start-up and once during production, submit samples split from your HMA production sample for California Test 371 to the Engineer and the Transportation Laboratory, Attention: Moisture Test.

With the JMF submittal, at project start-up, and each 5,000 tonnes, submit the California Test 371 test results for mix design and production to the Engineer and electronically to:

Moisture_Tests@dot.ca.gov

Quality Control and Assurance

For the mix design, determine the plasticity index of the aggregate blend under California Test 204. Choose an antistrip treatment and use the corresponding laboratory procedure for the mix design in compliance with:

Antistrip Treatment Lab Procedures for Mix Design

Antistrip Treatment	Lab Procedure
Plasticity index from 4 to 10 [a]	
Dry hydrated lime with marination	LP-6
Lime slurry with marination	LP-7
Plasticity index less than 4	
Liquid	LP-5
Dry hydrated lime without marination	LP-6
Dry hydrated lime with marination	LP-6
Lime slurry with marination	LP-7

Notes:
[a] If the plasticity index is greater than 10, do not use that aggregate blend.

For the mix design, determine tensile strength ratio under California Test 371 on untreated HMA. If the tensile strength ratio is less than 70:

A. Choose from the antistrip treatments specified based on plasticity index.
B. Test treated HMA under California Test 371.
C. Treat to a minimum tensile strength ratio of 70.

On the first production day and at least every 5,000 tonnes, sample HMA and test under California Test 371.

The Department does not use California Test 371 test results for JMF verification and production to determine specification compliance.

With the minimum quality control testing for the specified construction process, perform sampling and testing at the specified frequency for the following quality characteristics:

Minimum Quality Control

Quality Characteristic	Test Method	Minimum Sampling and Testing Frequency	Requirement	
Asphalt binder content (%)	CT 379 or 382	1 per 750 tonnes and any remaining part	JMF ± 0.40	
Stabilometer Value [a, b] (min.)	CT 366	1 per 4,000 tonnes or 1 per 2 business days, whichever is more	37 [c] (Modified) 35 [d]	
Air voids content (%) [a, e]	CT 367		Design ± 2	
Percent of crushed particles [f] Coarse aggregate (% min.) Two fractured faces Fine aggregate (Passing 4.75 mm sieve and retained on 2.36 mm) (% min) One fractured face	CT 205	1 per 5,000 tonnes or 1 per 5 business days, whichever is more	95 90	
Fine aggregate angularity [f, g] (% min.)	AASHTO T 304 Method A		45	
Los Angeles Rattler [f] Loss at 100 rev. (% max.) Loss at 500 rev. (% max.)	CT 211	As necessary and designated in the QCP. At least once per project	12 40	
Flat and elongated particles [f] (% max. by weight @ 5:1)	ASTM D 4791		10	
		Design air void content	4.0	5.0
Percent of maximum theoretical density (%) [h, i, j]	CT 375	1 per 750 tonnes or any single location, whichever is less	92 – 97	91 – 96
Voids in mineral aggregate (% min.) 12.5-mm grading 19-mm grading 25-mm grading [k] with NMAS = 25-mm with NMAS = 19-mm	LP-2	1 per 4,000 tonnes or 1 per 2 business days, whichever is more	 14 13 12 13	 15 14 13 14
Voids filled with asphalt (%) 12.5-mm grading 19-mm grading 25-mm grading	LP-3		 65 - 75 65 - 75 65 - 75	 60 - 70 60 - 70 60 - 70
Dust proportion [l] (P200/Pbe)	LP-4	1 per 4,000 tonnes or 1 per 2 business days, whichever is more (Report Only)	0.6 – 1.3	0.6 – 1.3

Notes:

[a] Report the average of 3 tests from a single split sample.

[b] If the stability range is more than 12 points, prepare and test new briquettes.

[c] Follow CT 366: 150 tamps at 3.45 Mpa tamping pressure and 110 °C compaction temperature; cool specimens to 60 °C; apply 56 kN leveling load; and perform stabilometer test at 60 °C.

[d] Modify CT 366: 150 tamps at 3.45 Mpa tamping pressure and 110 °C compaction temperature; cool specimens to 140 °F; apply additional 500 tamps at 3.45 Mpa tamping pressure and 60 °C compaction temperature; apply 56 kN leveling load; and perform stabilometer test at 60 °C.

[e] Determine the bulk specific gravity of each lab-compacted briquette under CT 308, Method A. Determine theoretical maximum specific gravity under CT 309. Calculate the air voids content of each specimen using CT 309 and LP 1. Modify CT 367, Paragraph C5, to use the design air voids content specified under "Hot Mix Asphalt Type C Mixture."

[f] Aggregate must comply with the quality specifications before it is treated with lime. During lime treatment except for dry lime on damp aggregate treatment at continuous mixing plants, sample coarse and fine aggregate from individual stockpiles. Combine aggregate in the JMF proportions. Prepare and test 3 samples from a single split sample for aggregate quality at the frequency specified during lime treatment and report test results as the average of the 3 tests.

[g] Void if HMA contains less than 10 percent of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

[h] Required if the specified paved thickness is at least 45 mm.

[i] Determine maximum theoretical density (California Test 309) at the frequency specified for Test Maximum Density under California Test 375, Part 5.D.

[j] For Standard process, take and average 3 cores per 250 tonnes of HMA placed

[k] Minimum VMA dependent upon NMAS of JMF. NMAS is defined as one sieve size larger than the first sieve to retain more than 10 percent.

[l] Asphalt content based on dry weight of aggregate.

With the acceptance testing for the specified construction process, the Engineer samples and tests the following quality characteristics:

HMA Type C Acceptance

Quality Characteristic	Test Method	Requirement	
Asphalt binder content (%)	CT 379 or 382	JMF ± 0.40	
Stabilometer Value [a, b] (min.)	CT 366	37 [c] (Modified) 35 [d]	
Air voids content (%) [a, e]	CT 367	Design ± 2	
Percent of crushed particles [f] Coarse aggregate (% min.) Two fractured faces Fine aggregate (Passing 4.75 mm sieve and retained on 2.36 mm sieve) (% min) One fractured face	CT 205	 95 90	
Fine aggregate angularity [f, g] (% min.)	AASHTO T 304 Method A	45	
Los Angeles Rattler [f] Loss at 100 rev. (% max.) Loss at 500 rev. (% max.)	CT 211	 12 40	
Flat and elongated particles [f] (% max. by weight @ 5:1)	ASTM D 4791	 10	
	Design air void content	4.0	5.0
Percent of maximum theoretical density (%) [h, i, j]	CT 375	92 – 97	91 – 96
Voids in mineral aggregate (% min.) 12.5-mm grading 19-mm grading 25-mm grading [k] with NMAS = 25-mm with NMAS = 19-mm	LP-2	 14 13 12 13	 15 14 13 14
Voids filled with asphalt (%) 12.5-mm grading 19-mm grading 25-mm grading	LP-3	 65 - 75 65 - 75 65 - 75	 60 - 70 60 - 70 60 - 70
Dust proportion [l] (P200/Pbe)	LP-4	0.6 – 1.3 Report Only	

Notes:

[a] The Engineer reports the average of 3 tests from a single split sample.

[b] If the stability range is more than 12 points, the Engineer prepares and tests new briquettes.

[c] The Engineer follows CT 366: 150 tamps at 3.45 Mpa tamping pressure and 110 °C compaction temperature; cool specimens to 60 °C;; apply 56 kN leveling load; and perform stabilometer test at 60 °C;.

[d] Modify CT 366: 150 tamps at 3.45 Mpa tamping pressure and 110 °C compaction temperature; cool specimens to 60 °C; apply additional 500 tamps at 3.45 Mpa tamping pressure and 60 °C; compaction temperature; apply 56 kN leveling load; and perform stabilometer test at 60 °C;.

[e] The Engineer determines the bulk specific gravity of each lab-compacted briquette under CT 308, Method A. The Engineer determines theoretical maximum specific gravity under CT 309. The Engineer calculates the air voids content of each specimen using CT 309 and LP 1. The Engineer modifies CT 367, Paragraph C5, to use the design air voids content specified under "Hot Mix Asphalt Type C Mixture."

[f] Aggregate must comply with the quality specifications before it is treated with lime. During lime treatment, except for dry lime on damp aggregate treatment at continuous mixing plants; the Engineer samples coarse and fine aggregate from individual stockpiles, combines aggregate in the JMF proportions, and prepares and tests 3 samples from a single split sample for aggregate quality at the frequency specified during lime treatment and report test results as the average of the 3 tests.

[g] Void if HMA contains less than 10 percent of nonmanufactured sand by weight of total aggregate. Manufactured sand is fine aggregate produced by crushing rock or gravel.

[h] Required if the specified paved thickness is at least 45 mm.

[i] Determine maximum theoretical density (California Test 309) at the frequency specified for Test Maximum Density under California Test 375, Part 5.D.

[j] For Standard process, take and average 3 cores per 250 tonnes of HMA placed.

[k] Minimum VMA dependent upon NMAS of JMF. NMAS is defined as one sieve size larger than the first sieve to retain more than 10 percent.

[l] Asphalt content based on dry weight of aggregate.

The Engineer tests the 3 density cores you take from each 250 tonnes of HMA production. The Engineer determines the percent of maximum theoretical density for each density core by determining the density core's density and dividing by the maximum theoretical density. The Engineer determines the percent of maximum theoretical density for each 250 tonnes of HMA production by determining the average of the 3 density cores.

If the specified total paved thickness is at least 45-mm and any layer is less than 45-mm, the Engineer determines the percent of maximum theoretical density from density cores taken from the final layer measured the full depth of the total paved HMA.

For each 250 tonnes of HMA production, the Engineer determines a deduction for percent of maximum theoretical density for each average of 3 density cores if it is outside the specifications, as follows:

Reduced Payment Factors for Percent of Maximum Theoretical Density

HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor	HMA Type A and B and RHMA-G Percent of Maximum Theoretical Density	Reduced Payment Factor
91.0	0.0000	96.0	0.0000
90.9	0.0125	96.1	0.0125
90.8	0.0250	96.2	0.0250
90.7	0.0375	96.3	0.0375
90.6	0.0500	96.4	0.0500
90.5	0.0625	96.5	0.0625
90.4	0.0750	96.6	0.0750
90.3	0.0875	96.7	0.0875
90.2	0.1000	96.8	0.1000
90.1	0.1125	96.9	0.1125
90.0	0.1250	97.0	0.1250
89.9	0.1375	97.1	0.1375
89.8	0.1500	97.2	0.1500
89.7	0.1625	97.3	0.1625
89.6	0.1750	97.4	0.1750
89.5	0.1875	97.5	0.1875
89.4	0.2000	97.6	0.2000
89.3	0.2125	97.7	0.2125
89.2	0.2250	97.8	0.2250
89.1	0.2375	97.9	0.2375
89.0	0.2500	98.0	0.2500
< 89.0	Remove and Replace	> 98.0	Remove and Replace

MATERIALS

Asphalt Binder

The grade of asphalt binder mixed with aggregate for HMA Type C must be PG 64-28 PM.

Aggregate

The aggregate for HMA Type C must comply with the 25-mm grading.

Choose a sieve size target value (TV) within each target value limit presented in the following table:

Aggregate Gradation
(Percentage Passing)
HMA Type C

25-mm HMA Type C

Sieve Sizes	Target Value Limits	Allowable Tolerance
25-mm	100	—
19-mm	88 - 93	TV ±5
12.5-mm	72 - 85	TV ±6
9.5-mm	55 - 70	TV ±6
4.75-mm	35 - 52	TV ±7
2.36-mm	22 - 40	TV ±5
0.6-mm	8 - 24	TV ±4
0.3-mm	5 - 18	TV ±4
0.075-mm	3 - 7	TV ±2

19-mm HMA Type C

Sieve Sizes	Target Value Limits	Allowable Tolerance
25-mm	100	—
19-mm	90 - 95	TV ±5
12.5-mm	60 - 75	TV ±6
4.75-mm	35 - 52	TV ±7
2.36-mm	22 - 36	TV ±5
0.6-mm	8 - 18	TV ±4
0.075-mm	3 - 7	TV ±2

12.5-mm HMA Type C

Sieve Sizes	Target Value Limits	Allowable Tolerance
19-mm	100	—
12.5-mm	90 - 98	TV ±6
9.5-mm	64 - 84	TV ±6
4.75-mm	42 - 57	TV ±7
2.36-mm	29 - 39	TV ±5
0.6-mm	13 - 19	TV ±4
0.075-mm	3 - 7	TV ±2

Before the addition of asphalt binder and lime treatment, aggregate must comply with:

Aggregate Quality

Quality Characteristic	Test Method	Requirement
Percent of crushed particles [a]	CT 205	
Coarse aggregate (% min.)		
Two fractured faces		95
Fine aggregate (Passing No. 4 sieve and retained on 2.36 mm sieve.) (% min)		
One fractured face		90
Los Angeles Rattler (% Max.) [a]	CT 211	
Loss at 100 rev.		12
Loss at 500 rev.		40
Sand equivalent [a, b] (min.)	CT 217	47
Fine aggregate angularity (% min.) [a]	AASHTO T 304 Method A	45
Flat and elongated particles (% max. by weight @ 5:1).) [a]	ASTM D 4791	10

Note:
[a] During lime treatment except for dry lime on damp aggregate treatment at continuous mixing plants, sample coarse and fine aggregate from individual stockpiles. Combine aggregate in the JMF proportions.
[b] Reported value must be the average of 3 tests from a single sample.

Hot Mix Asphalt Type C Mixture

During mix design, determine the optimum binder content (OBC) at 5.0 percent air voids content.

Determine the proposed JMF from a mix design that complies with:

Hot Mix Asphalt Mix Design Requirements

Quality Characteristic	Test Method or Lab Procedure	Requirement	
Design air voids content (%)		4.0	5.0
Air voids content [a] (%)	CT 367	4.0	5.0
Voids in mineral aggregate (% min.) [b]	LP-2		
12.5-mm grading		14.0	15.0
19-mm grading		13.0	14.0
25-mm grading			
with NMAS = 25-mm		12	13
with NMAS = 19-mm		13	14
Voids filled with asphalt (%)	LP-3		
12.5-mm grading		65.0 – 75.0	60.0 – 70.0
19-mm grading		65.0 – 75.0	60.0 – 70.0
25-mm grading		65.0 – 75.0	60.0 – 70.0
Dust proportion [c] (P200/Pbe)	LP-4	0.6 – 1.3	0.6 – 1.3
Stabilometer value (min.) [d]	CT 366	37 [e] (Modified) 35 [f]	37 [e] (Modified) 35 [f]

Notes:
[a] Calculate the air voids content of each specimen using CT 309 and LP-1. Modify CT 367, Paragraph C5, to use the exact air voids content specified in the selection of OBC.
[b] Minimum VMA is dependent upon NMAS of JMF. NMAS is defined as one sieve size larger than the first sieve to retain more than 10 percent.
[c] Asphalt content based on dry weight of aggregate
[d] Modify CT 304, Part 2.B.2.c: "After compaction in the compactor, cool to 140 °± 5 °F by allowing the briquettes to cool at room temperature for 0.5-hour, then place the briquettes in the oven at 140 °F for a minimum of 2 hours and not more than 3 hours."
[e] Follow CT 366: 150 tamps at 3.45 Mpa tamping pressure and 110 °C compaction temperature; cool specimens to 60 °C; apply 56 kN leveling load; and perform stabilometer test at 140 °F.
[f] Modify CT 366: 150 tamps at 3.45 Mpa tamping pressure and 110 °C compaction temperature; cool specimens to 60 °C; apply additional 500 tamps at 3.45 Mpa; apply 56 kN leveling load; and perform stabilometer test at 60 °C.

CONSTRUCTION

Pave HMA Type C in maximum 135-mm thick compacted layers.

Vertical Joints

If you perform half-width paving, at the end of each day's work the distance between the ends of adjacent surfaced lanes must not be greater than can be completed in the following day of normal paving.

Before opening the lane to traffic, pave shoulders and median borders adjacent to a lane being paved.

Do not leave a vertical joint more than 45-mm high between adjacent lanes open to public traffic.

Widening

If widening existing pavement, construct the new pavement structure on both sides of the existing pavement to match the elevation of the existing pavement edge for the entire pavement length before placing HMA Type C over the existing pavement.

If widening existing pavement, construct the new pavement structure on both sides of the existing pavement to match the elevation of the existing pavement's edge at each location before placing HMA Type C over the existing pavement.

Conform Tapers

Place additional HMA Type C along the pavement's edge to conform to road connections and private drives. Hand rake, if necessary, and compact the additional HMA Type C to form a smooth conform taper.

Payment – The contract unit bid price paid per tonn for Asphalt Concrete (Type C) shall include full compensation for furnishing all labor, tools, materials, equipment, and incidentals, and for doing all the work involved and complete in place and no additional compensation will be allowed therefor.

10-1.70 HOT MIX ASPHALT (TYPE A BOND BREAKER):

GENERAL

Summary

This work includes producing and placing hot mix asphalt Type A - Bond Breaker using the Standard process.

HMA Type A - Bond Breaker must comply with the requirements for HMA Type A of Section 39, "Hot Mix Asphalt" of the Standard Specifications.

Submittals

Apply white pigmented curing compound to the finished surface of the HMA Type A (Bond Breaker) within 2 days of placing the Portland cement concrete pavement. Pigmented curing compound must conform to the requirements of ASTM Designation C 309, Type 2, Class A. Curing compound must be applied in 2 separate applications to the area to be surfaced with Portland cement concrete pavement. Apply curing compound at the rate of 3.8 liters per 14 square meters.

ENGINEER'S ACCEPTANCE

The Engineer samples for acceptance testing, and tests for:

HMA Type A – Bond Breaker Acceptance

Quality Characteristic	Test Method	Requirement
Aggregate gradation [a]	CT 202	JMF ± Tolerance [b]
Sand equivalent (min.) [c, f]	CT 217	47
Asphalt binder content	CT 379 or 382	JMF ± 0.45%
HMA moisture content (max.)	CT 370	1.0%
Percent of maximum theoretical density (minimum) [d, e]	Quality control plan	96%
Percent of crushed particles coarse aggregate (% min.) [f]	CT 205	
One fractured face		90
Two fractured faces		75
Fine aggregate (% min) [f] (Passing 4.75-mm sieve and retained on 2.36-mm sieve.)		
One fractured face		70
Los Angeles Rattler (% max.) [f]	CT 211	
Loss at 500 rev.		45

Notes:
[a] The Engineer determines combined aggregate gradation containing RAP under Laboratory Procedure LP-9.
[b] The tolerances must comply with the allowable tolerances in Section 39-1.02E, "Aggregate."
[c] The Engineer reports the average of 3 tests from a single split sample.
[d] Required if the total paved thickness is at least 45-millimeters.
[e] The Engineer determines maximum theoretical density (California Test 309) at the frequency specified for Test Maximum Density under California Test 375, Part 5.D.
[f]. The point and method of sampling will be agreed upon before aggregate production begins. Perform this test before lime treatment.

MATERIALS

The grade of asphalt binder mixed with aggregate for HMA Type A - Bond Breaker must be PG 64-16.

Aggregate

The aggregate for HMA Type A – Bond Breaker must comply with the 9.5-millimeters grading.

Asphalt Binder Content

Increase the amount of asphalt binder mixed with aggregate for HMA Type A - Bond Breaker by 1.0 percent by weight of the dry aggregate over the optimum binder content (OBC) determined for use in HMA Type A under California Test 367.

Job Mix Formula and HMA Type A – Bond Breaker Evaluation

Prior to the 1.0 percent increase in asphalt binder, HMA Type A used for HMA Type A - Bond Breaker must conform to the requirements of Hot Mix Asphalt Mix Design Requirements.

Verification is testing for compliance with the specifications for:

A. Aggregate quality.
B. HMA quality specified in the table HMA Type A - Bond Breaker Acceptance except percent of maximum theoretical density.

CONSTRUCTION

Tack Coat

Apply tack coat for the HMA Type A – Bond Breaker to the Lean Concrete Base at the same rate as HMA over existing PCC pavement per Section 39-1.09.

Antistrip Treatment

Treat aggregate with lime slurry under "Hot Mix Asphalt Aggregate Lime Treatment – Slurry Method" and use Lab Procedure LP-7 for the mis design.

PAYMENT

HMA Type A - Bond Breaker will be measured and paid for in the same manner specified for HMA in conformance with the requirements of Section 39-5, "Measurement and Payment" of the Standard Specifications.

Full compensation for the additional 1 percent of asphalt binder used in HMA Type A - Bond Breaker and for furnishing and applying white pigmented curing compound to the surface of the HMA Type A - Bond Breaker is included in the contract price paid per tonne for HMA Type A - Bond Breaker as designated in the Engineer's Estimate and no separate payment will be made therefor.

10-1.71 HOT MIX ASPHALT (MISCELLANEOUS AREAS):

GENERAL

Summary

This work includes producing hot mix asphalt (HMA) and placing it on miscellaneous areas.

Comply with Section 39, "Hot Mix Asphalt" of the Standard Specifications.

MEASUREMENT AND PAYMENT

The pay quantity of asphalt concrete dikes and miscellaneous areas, the placing of which are to be paid for as a separate item of work on a meter/square meter basis in addition to the price paid for the asphalt concrete material.

Asphalt binder to be mixed with the aggregate shall be PG 70-10 in accordance with the Special Provisions for asphalts, or as directed by the Engineer.

Full compensation for tack coat for miscellaneous areas is considered as included in the contract price paid per tonne for the hot mix asphalt used in miscellaneous areas and no separate payment will be made therefor.

10-1.72 HOT MIX ASPHALT AGGREGATE LIME TREATMENT – SLURRY METHOD:

GENERAL

Summary

This work includes treating hot mix asphalt (HMA) aggregate with lime using the slurry method and placing it in stockpiles to marinate.

Treat aggregate for HMA Type A, HMA Type A – Bond Breaker and HMA Type C with lime slurry.

Submittals

Determine the exact lime proportions for fine and coarse virgin aggregate and submit them as part of the proposed job mix formula (JMF) under Section 39, "Hot Mix Asphalt" of the Standard Specifications.

Submit the averaged aggregate quality test results to the Engineer within 24 hours of sampling.

Submit a treatment data log from the slurry proportioning device in the following order:

A. Treatment date.
B. Time of day the data is captured.
C. Aggregate size being treated.
D. Wet aggregate flow rate collected directly from the aggregate weigh belt.
E. Moisture content of the aggregate just before treatment, expressed as a percent of the dry aggregate mass.
F. Dry aggregate flow rate calculated from the wet aggregate flow rate.
G. Lime slurry flow rate measured by the slurry meter.
H. Dry lime flow rate calculated from the slurry meter output.
I. Approved lime ratio for each aggregate size being treated.

J. Actual lime ratio calculated from the aggregate weigh belt and the slurry meter output, expressed as a percent of the dry aggregate mass.
K. Calculated difference between the approved lime ratio and the actual lime ratio.
L. Dry lime and water proportions at the slurry treatment time.

Every day during lime treatment, submit the treatment data log on electronic media in tab delimited format on a removable CD-ROM storage disk. Each continuous treatment data set must be a separate record using a line feed carriage return to present the specified data on one line. The reported data must include data titles at least once per report.

Quality Control and Assurance

Your quality control plan (QCP) must include aggregate quality control sampling and testing during aggregate lime treatment. Perform sampling and testing in compliance with:

Aggregate Quality Control During Lime Treatment

Quality Characteristic	Test Method	Minimum sampling and testing frequency
Sand Equivalent	CT 217	Once per 1 000 tonnes of aggregate treated with lime
Percent of crushed particles	CT 205	As necessary and as designated in the QCP
Los Angeles Rattler	CT 211	
Fine aggregate angularity	AASHTO T 304, Method A	
Flat and elongated particles	ASTM D 4791	

Note:
During lime treatment, sample coarse and fine aggregate from individual stockpiles. Combine aggregate in the JMF proportions. Run tests for aggregate quality in triplicate and report test results as the average of 3 tests.

The Engineer orders proportioning operations stopped for any of the following if you:

A. Do not submit the treatment data log.
B. Do not submit the aggregate quality control data.
C. Submit incomplete, untimely, or incorrectly formatted data.
D. Do not take corrective actions.
E. Take late or unsuccessful corrective actions.
F. Do not stop treatment when proportioning tolerances are exceeded.
G. Use malfunctioning or failed proportioning devices.

If you stop treatment, notify the Engineer of any corrective actions taken and conduct a successful 20-minute test run before resuming treatment.

For the aggregate to be treated, determine the moisture content at least once during each 2 hours of treatment. Calculate moisture content under California Test 226 or California Test 370 and report it as a percent of dry aggregate mass. Use the moisture content calculations as a set point for the proportioning process controller.

MATERIALS

High-calcium hydrated lime and water must comply with Section 24-1.02, "Materials" of the Standard Specifications.

Before virgin aggregate is treated, it must comply with the aggregate quality specifications. Do not test treated aggregate for quality control except for gradation. The Engineer does not test treated aggregate for acceptance except for gradation. If reclaimed asphalt pavement (RAP) is used, the Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.

The Engineer determines the combined aggregate gradation during HMA production after you have treated aggregate.

Treated aggregate must not have lime balls or clods.

CONSTRUCTION

General

Notify the Engineer at least 24 hours before the start of aggregate treatment.

Treat aggregate separate from HMA production.

Do not treat RAP.

Add lime to the aggregate as slurry consisting of mixed dry lime and water at a ratio of 1 part lime to between 2 parts and 3 parts water by mass. The slurry must completely coat the aggregate.

Lime treat and marinate coarse and fine aggregates separately.

Immediately before mixing lime slurry with aggregate, water must not visibly separate from aggregate.

Treat aggregate and stockpile for marination only once.

The lime ratio is the kilograms of dry hydrated lime per 100 kg of dry virgin aggregate expressed as a percent. Water content of slurry or untreated aggregate must not affect the lime ratio.

Lime ratio ranges are:

Aggregate Gradation	Lime Ratio
Coarse	0.4 to 1.0
Fine	1.5 to 2.0
Combined virgin aggregate	0.8 to 1.5

The lime ratio for fine and coarse aggregate must be within ±0.2 percent of the lime ratio in the accepted JMF. The lime ratio must be within ±0.2 percent of the approved lime ratio when you combine the individual aggregate sizes in the JMF proportions. Determine the lime ratio before adding RAP.

If 3 consecutive sets of recorded treatment data indicate deviation more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment.

If a set of recorded treatment data indicates a deviation of more than 0.4 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the material represented by that set of data in HMA.

If 20 percent or more of the total daily treatment indicates deviation of more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the day's total treatment in HMA.

If you stop treatment for noncompliance, you must implement corrective action and successfully treat aggregate for a 20-minute period. Notify the Engineer before beginning the 20-minute treatment period.

Lime Slurry Proportioning

Proportion lime and water with a continuous or batch operation.

The device controlling slurry proportioning must produce a treatment data log. The log consists of a series of data sets captured at 10-minute intervals throughout daily treatment. The data must be a treatment activity register and not a summation. The material represented by the data set is the amount produced 5 minutes before and 5 minutes after the capture time. For the contract's duration, collected data must be stored by the controller.

Proportioning and Mixing Lime Slurry Treated Aggregate

Treat HMA aggregate by proportioning lime slurry and aggregate by mass in a continuous operation.

Marinate treated aggregate in stockpiles from 24 hours to 60 days before using in HMA. Do not use aggregate marinated longer than 60 days.

MEASUREMENT AND PAYMENT

Full compensation for treating aggregates with lime slurry shall be considered as included in the contract price paid per tonne for Hot Mix Asphalt (Type C) as designated in the Engineer's Estimate and no separate payment will be made therefor.

10-1.73 HOT MIX ASPHALT AGGREGATE LIME TREATMENT – DRY LIME METHOD:

GENERAL

Summary

This work includes treating hot mix asphalt (HMA) aggregate with lime using the dry lime method either with marination or without.

Treat aggregate for HMA Type C with dry lime.

Marinate aggregate if the plasticity index determined under California Test 204 is from 4 to 10.

Submittals

Determine the exact lime proportions for fine and coarse virgin aggregate and submit them as part of the proposed job mix formula (JMF) under Section 39, "Hot Mix Asphalt" of the Standard Specifications.

If marination is required, submit in writing the averaged aggregate quality test results to the Engineer within 24 hours of sampling.

Submit in writing a treatment data log from the dry lime and aggregate proportioning device in the following order:

A. Treatment date.
B. Time of day the data is captured.
C. Aggregate size being treated.
D. HMA type and mix aggregate size.
E. Wet aggregate flow rate collected directly from the aggregate weigh belt.
F. Aggregate moisture content, expressed as a percent of the dry aggregate mass.
G. Flow rate of dry aggregate calculated from the flow rate of wet aggregate.
H. Dry lime flow rate.
I. Lime ratio from the accepted JMF for each aggregate size being treated.
J. Lime ratio from the accepted JMF for the combined aggregate.
K. Actual lime ratio calculated from the aggregate weigh belt output, the aggregate moisture input, and the dry lime meter output, expressed as a percent of the dry aggregate mass.
L. Calculated difference between the approved lime ratio and the actual lime ratio.

Every day during lime treatment, submit the treatment data log on electronic media in tab delimited format on a removable CD-ROM storage disk. Each continuous treatment data set must be a separate record using a line feed carriage return to present the specified data on one line. The reported data must include data titles at least once per report.

Quality Control and Assurance

If marination is required, the quality control plan (QCP) specified in Section 39-4, "Quality Control/Quality Assurance" must include aggregate quality control sampling and testing during lime treatment. Perform sampling and testing in compliance with:

Quality Characteristic	Test Method	Minimum sampling and testing frequency
Sand Equivalent	CT 217	Once per 1 000 tonnes of aggregate treated with lime
Percent of crushed particles	CT 205	As necessary and as designated in the QCP
Los Angeles Rattler	CT 211	
Fine aggregate angularity	AASHTO T 304, Method A	
Flat and elongated particles	ASTM D 4791	

Note: During lime treatment, sample coarse and fine aggregate from individual stockpiles. Combine aggregate in the JMF proportions. Run tests for aggregate quality in triplicate and report test results as the average of 3 tests.

The Engineer orders proportioning operations stopped for any of the following if you:

A. Do not submit the treatment data log.
B. Do not submit the aggregate quality control data for marinated aggregate.
C. Submit incomplete, untimely, or incorrectly formatted data.
D. Do not take corrective actions.
E. Take late or unsuccessful corrective actions.
F. Do not stop treatment when proportioning tolerances are exceeded.
G. Use malfunctioning or failed proportioning devices.

If you stop treatment, notify the Engineer of any corrective actions taken and conduct a successful 20-minute test run before resuming treatment.

MATERIALS

Lime must be high-calcium hydrated lime. Lime and water must comply with Section 24-1.02, "Materials" of the Standard Specifications.

Before virgin aggregate is treated, it must comply with the aggregate quality specifications. Do not test treated aggregate for quality control except for gradation. The Engineer does not test treated aggregate for acceptance except for gradation.

The Engineer determines the combined aggregate gradation during HMA production after you have treated aggregate. If reclaimed asphalt pavement (RAP) is used, the Engineer determines combined aggregate gradations containing RAP under Laboratory Procedure LP-9.

Treated aggregate must not have lime balls or clods.

CONSTRUCTION

General

Notify the Engineer in writing at least 24 hours before the start of aggregate treatment.

Do not treat RAP.

If marination is required:

A. Treat and marinate coarse and fine aggregates separately.
B. Treat aggregate and stockpile for marination only once.
C. Treat aggregate separate from HMA production.

The lime ratio is the kilograms of dry hydrated lime per 100 kg of dry virgin aggregate expressed as a percent. Water content of untreated aggregate must not affect the lime ratio.

Lime ratio ranges are:

Aggregate Gradation	Lime Ratio
Coarse	0.4 to 1.0
Fine	1.5 to 2.0
Combined virgin aggregate	0.8 to 1.5

The lime ratio for fine and coarse aggregate must be within ±0.2 percent of the lime ratio in the accepted JMF. The lime ratio must be within ±0.2 percent of the approved lime ratio when you combine the individual aggregate sizes in the JMF proportions. Determine the lime ratio before adding of RAP.

Proportion dry lime by mass with a continuous operation.

The device controlling dry lime and aggregate proportioning must produce a treatment data log. The log consists of a series of data sets captured at 10-minute intervals throughout daily treatment. The data must be a treatment activity register and not a summation. The material represented by a data set is the amount produced 5 minutes before and 5 minutes after the capture time. For the duration of the contract, collected data must be stored by the controller.

If 3 consecutive sets of recorded treatment data indicate deviation more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment of lime treated aggregates.

If a set of recorded treatment data indicates a deviation of more than 0.4 percent above or below the lime ratio in the accepted JMF, stop treatment of lime treated aggregates and do not use the material represented by that set of data in HMA.

If 20 percent or more of the total daily treatment indicates deviation of more than 0.2 percent above or below the lime ratio in the accepted JMF, stop treatment and do not use the day's treated aggregate in HMA.

If you stop treatment for noncompliance, you must implement corrective action and successfully treat aggregate for a 20-minute period. Notify the Engineer before beginning the 20-minute treatment period.

If you use a batch-type proportioning operation for HMA production, control proportioning in compliance with the specifications for continuous mixing plants. Use a separate dry lime aggregate treatment operation from HMA batching operations including:

A. Pugmill mixer.
B. Controller.
C. Weigh belt for the lime.
D. Weigh belt for the aggregate.

If using a continuous mixing operation for HMA without lime marinated aggregates, use a controller that measures the blended aggregate mass after any additional water is added to the mixture. The controller must determine the amount of lime added to the aggregate from the aggregate weigh belt input in connection with the manually input total aggregate moisture, the manually input target lime content, and the lime proportioning system output. Use a continuous aggregate weigh belt and pugmill mixer for the lime treatment operation in addition to the weigh belt for the aggregate proportioning to asphalt binder in the HMA plant. If you use a water meter for moisture control for lime treatment, the meter must comply with California Test 109.

At the time of mixing dry lime with aggregate, the aggregate moisture content must ensure complete lime coating. The aggregate moisture content must not cause aggregate to be lost between the point of weighing the combined aggregate continuous stream and the dryer. Add water for mixing and coating aggregate to the aggregate before dry lime addition. Immediately before mixing lime with aggregate, water must not visibly separate from aggregate.

The HMA plant must be equipped with a bag house dust system. Material collected in the dust system must be returned to the mix.

Mixing Dry Lime and Aggregate

Mix aggregate, water, and dry lime with a continuous pugmill mixer with twin shafts. Immediately before mixing lime with aggregate, water must not visibly separate from aggregate. Store dry lime in a uniform and free flowing condition. Introduce dry lime to the pugmill in a continuous operation. The introduction must occur after the aggregate cold feed and before the point of proportioning across a weigh belt and the aggregate dryer. Prevent loss of dry lime.

If marination is required, marinate treated aggregate in stockpiles between 24 hours and 60 days before using in HMA. Do not use aggregate marinated more than 60 days.

The pugmill must be equipped with paddles arranged to provide sufficient mixing action and mixture movement. The pugmill must produce a homogeneous mixture of uniformly coated aggregates at mixer discharge.

If the aggregate treatment operation is stopped longer than 1 hour, clean the equipment of partially treated aggregate and lime.

Aggregate must be completely treated before introduction into the mixing drum.

MEASUREMENT AND PAYMENT

Full compensation for dry lime treating HMA aggregate including marination shall be considered as included in the contract price paid per tonne for Hot Mix Asphalt (Type C) as designated in the Engineer's Estimate and no separate payment will be made therefor.

10-1.74 LIQUID ANTISTRIP TREATMENT:

GENERAL

Summary

This work includes treating asphalt binder with liquid antistrip (LAS) treatment to bond the asphalt binder to aggregate in hot mix asphalt (HMA).

Submittals

For LAS, submit with the proposed job mix formula (JMF) submittal under Section 39, "Hot Mix Asphalt" of the Standard Specifications:

A. Materials Safety Data Sheet (MSDS).
B. One 1/2-L sample.
C. Infrared analysis including copy of absorption spectra.

Submit a certified copy of test results and a MSDS for each LAS lot.

Submit a Certificate of Compliance under Section 6-1.07, "Certificates of Compliance" of the Standard Specifications for each LAS shipment. With each certificate also submit:

A. Your signature and printed name.
B. Shipment number.
C. Material type.
D. Material specific gravity.

E. Refinery.
F. Consignee.
G. Destination.
H. Quantity.
I. Contact or purchase order number.
J. Shipment Date.

Submit proportions for LAS as part of the JMF submittal specified in Section 39-1.03, "Hot Mix Asphalt Mix Design Requirements" of the Standard Specifications. If you change the brand or type of LAS, submit a new JMF.

For each job site delivery of LAS, submit one 1/4-L sample to the Transportation Laboratory. Submit shipping documents to the Engineer. Label each LAS sampling container with:

A. LAS type.
B. Application rate.
C. Sample date.
D. Contract number.

At the end of each day's production shift, submit production data in electronic and printed media. Present data on electronic media in tab delimited format. Use line feed carriage return with one separate record per line for each production data set. Allow sufficient fields for the specified data. Include data titles at least once per report. For each mixing operation type, submit in order:

A. Batch Mixing:

1. Production date.
2. Time of batch completion.
3. Mix size and type.
4. Each ingredient's mass.
5. Asphalt binder content as percentage of dry aggregate mass.
6. LAS content as percentage of asphalt binder mass.

B. Continuous Mixing:

1. Production date.
2. Data capture time.
3. Mix size and type.
4. Flow rate of wet aggregate collected directly from the aggregate weigh belt.
5. Aggregate moisture content as percentage of dry aggregate mass.
6. Flow rate of asphalt binder collected from the asphalt binder meter.
7. Flow rate of LAS collected from the LAS meter.
8. Asphalt binder content as percentage of dry aggregate mass calculated from:

8.1. Aggregate weigh belt output.

8.2. Aggregate moisture input.
8.3. Asphalt binder meter output.

9. LAS content as percentage of asphalt binder mass calculated from:

9.1. Asphalt binder meter output.
9.2. LAS meter output.

Quality Control and Assurance

For continuous mixing and batch mixing operations, sample asphalt binder before adding LAS. For continuous mixing operations, sample combined asphalt binder and LAS after the static mixer.

The Engineer orders proportioning operations stopped for any of the following if you:

A. Do not submit data.
B. Submit incomplete, untimely, or incorrectly formatted data.
C. Do not take corrective actions.
D. Take late or unsuccessful corrective actions.
E. Do not stop production when proportioning tolerances are exceeded.
F. Use malfunctioning or failed proportioning devices.

If you stop production, notify the Engineer of any corrective actions taken before resuming.

MATERIALS

LAS-treated asphalt binder must comply with Section 39, "Hot Mix Asphalt" of the Standard Specifications. LAS does not substitute for asphalt binder.

LAS total amine value must be 325 minimum when tested under ASTM D 2074.

Use only 1 LAS type or brand at a time. Do not mix LAS types or brands.

Store and mix LAS under the manufacturer's recommendations.

CONSTRUCTION

LAS must be between 0.5 and 1.0 percent by mass of asphalt binder.

If 3 consecutive sets of recorded production data show actual delivered LAS mass is more than ±1 percent of the approved mix design LAS weight, stop production and take corrective action.

If a set of recorded production data shows actual delivered LAS mass is more than ±2 percent of the approved mix design LAS weight, stop production. If the LAS mass exceeds 1.2 percent of the asphalt binder mass, do not use the HMA represented by that data.

The continuous mixing plant controller proportioning the HMA must produce a production data log. The log consists of a series of data sets captured at 10-minute intervals throughout daily production. The data must be a production activity register and not a summation. The material represented by the data is the amount produced 5 minutes before and 5 minutes after the capture time. For the duration of the contract, collected data must be stored by the plant controller or a computer's memory at the plant.

MEASUREMENT AND PAYMENT

Full compensation for LAS shall be considered as included in the contract price paid per tonne for Hot Mix Asphalt (Type C) as designated in the Engineer's Estimate and no separate payment will be made therefor.

10-1.75 PRIME COAT:

GENERAL

Summary

This work includes applying liquid asphalt prime coat. The Engineer designates areas receiving prime coat.

Comply with Section 93, "Liquid Asphalts" of the Standard Specifications.

MATERIALS

Liquid asphalt for prime coat must be Asphaltic Emulsion Grade SS1.

CONSTRUCTION

Apply at least 0.90 L of prime coat per square meter of designated area. Do not apply more prime coat than can be absorbed completely by the aggregate base in 24 hours.

The Contractor may request in writing the Engineer's approval to modify prime coat application rates.

Before paving, prime coat must cure for 48 hours.

Close public traffic to areas receiving prime coat. Do not track prime coat onto pavement surfaces beyond the job site.

MEASUREMENT AND PAYMENT

The Engineer determines prime coat quantities under the specifications for liquid asphalt in Section 93-1.04, "Measurement" of the Standard Specifications.

The contract price paid per tonne for Tack Coat shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in prime coat and complete in place as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

10-1.76 JOINTED PLAIN CONCRETE PAVEMENT:

GENERAL

Summary

This work includes constructing jointed plain concrete pavement.

Comply with Section 40, "Concrete Pavement" of the Standard Specifications.

Submittals

Submit AASHTO T 336 coefficient of thermal expansion test results to the Engineer.

For rejected test strips, submit a plan for changed materials, methods, or equipment before constructing additional test strips.

Quality Control and Assurance

General

Perform coefficient of thermal expansion testing under AASHTO T 336 at a frequency of 1 test for each day of paving.

Perform profilograph testing on concrete shoulders. Testing and test results must comply with the specifications for concrete pavement smoothness, profilograph test procedure, and corrective action for traffic lanes.

Prepaving Conference

Meet with the Engineer at a prepaving conference at a mutually agreed time and place. Discuss methods of performing the production and paving work.

Prepaving conference attendees must sign an attendance sheet provided by the Engineer. The prepaving conference must be attended by the Contractor's:

A. Project superintendent.
B. Quality control manager.
C. Paving construction foreman.

D. Subcontractor's workers including:

1. Foremen.
2. Concrete plant manager.
3. Concrete plant operator.
4. Personnel performing saw cutting and joint sealing.

Do not start paving activities including test strips until the listed personnel have attended a prepaving conference.

Test Strips

The first paving activity must be to construct a test strip:

A. 220 m to 300 m long.
B. Same width as the planned paving.
C. With the same equipment used for the planned paving.

The Engineer evaluates the test strip for compliance with the specifications for Engineer's acceptance.

The Engineer selects from 6 to 12 core locations for dowel bars and up to 6 locations for tie bars per test strip.

If the Contractor uses mechanical dowel bar inserters, the test strip must demonstrate they do not leave voids, segregations, or surface irregularities such as depressions, dips, or high areas.

Allow the Engineer 3 days to evaluate the test strip for:

A. Smoothness.
B. Dowel bar and tie bar alignment.
C. Thickness.
D. Final finishing except coefficient of friction.

During the 3-day evaluation, the Engineer rejects a test strip if:

A. Surface varies more than 6-mm from a 3.66 m straightedge's lower edge.
B. Wheel path's individual high points are greater than 8-mm in 7.6 m.
C. Dowel bars do not comply with specified placement tolerances.
D. Concrete pavement thickness deficiency is greater than 15-mm.
E. Final finishing does not comply with the specifications except coefficient of friction.

Remove the test strip if the Engineer rejects it for noncompliance with the specifications for dowel bar alignment or thickness. Dispose of rejected test strip material under Section 7-1.13, "Disposal of Material Outside the Highway Right of Way" of the Standard Specifications.

If the Engineer rejects the test strip for noncompliance with the smoothness or final finishing specifications except coefficient of friction, the Contractor may grind the test strip into compliance if the Contractor intends to leave it as a part of the paving.

If the Engineer does not reject the test strip during the 3-day evaluation, the Contractor may begin production paving while the Engineer continues to evaluate the test strip for compliance with the other specifications. If the Engineer rejects the test strip for noncompliance with the other specifications, stop production paving until the Contractor constructs a test strip the Engineer accepts.

Construct additional test strips until the Engineer accepts one.

Construct additional test strips if:

A. The Contractor proposes different paving equipment including:

1. Batch plant.
2. Paver.
3. Dowel bar inserter.
4. Tie bar inserter.
5. Tining.
6. Curing equipment.

B. The Contractor changes concrete mix proportions.

The Engineer may allow paving to start without a test strip if the Contractor uses a batch plant mixer, paving equipment, and personnel that completed a County project within the preceding 12 months. Submit supporting documents and previous project information.

MATERIALS

Liquid Joint Sealant for Isolation Joints

Liquid joint sealant for isolation joints must be Silicone.

Joint Seal

Use compression seal for longitudinal and transverse joints.

Joint Filler for Isolation Joints

Joint filler for isolation joints must be preformed expansion joint filler for concrete (bituminous type) under ASTM D 994.

Tack Coat

Tack coat must comply with Section 39, "Hot Mix Asphalt" of the Standard Specifications.

CONSTRUCTION

Tie Bar Spacing on Curves

If the curvature of a concrete pavement slab prevents equal spacing of tie bars to maintain the minimum clearance from transverse joints, space them from 380-mm to 450-mm.

Transverse Contraction Joints

Transverse contraction joints must be Type A1. If widening existing concrete pavement, do not construct transverse contraction joints to match the existing pavement's joint spacing or skew unless specified. Transverse joints in concrete pavement on a curve must be on a single straight line through the curve's radius point.

Longitudinal Contraction Joints

Longitudinal contraction joints must be Type A2.

Transition Joints with Hot Mix Asphalt

If a joint between concrete pavement and hot mix asphalt is specified, apply tack coat between the concrete pavement and hot mix asphalt.

Concrete Pavement Removal

When removing and replacing concrete, remove it to full depth and width.

Removal and Replacement of Slabs without Bar Reinforcement

For full depth and partial length slab removal, saw cut the full depth and width.

Saw cut full slabs at the longitudinal and transverse joints. Saw cut partial slabs at joints and where the Engineer orders. The Contractor may make additional saw cuts within the removal area to facilitate slab removal or to prevent binding of the saw cut at the removal area's edge. Saw cut perpendicular to the slab surface.

Use slab lifting equipment with lifting devices that attach to the slab. After lifting the slab, paint the cut ends of dowels and tie bars.

Construct transverse and longitudinal construction joints between the new slab and existing concrete using dowel bars. For longitudinal joints, offset dowel bar holes from original tie bars by 75-mm. For transverse joints, offset dowel bars holes from the original dowel bars by 75-mm.

Drill holes and use chemical adhesive to bond the dowel bars to the existing concrete. Use an automated dowel bar drilling machine. Holes must be at least 3-mm greater than the dowel bar diameter. Clean the holes in compliance with the chemical

adhesive manufacturer's instructions. Holes must be dry when you place chemical adhesive.

Immediately after inserting dowel bars into the chemical adhesive-filled holes, support the dowel bars and leave them undisturbed for the minimum cure time recommended by the chemical adhesive manufacturer.

Clean the faces of joints and underlying base from loose material and contaminants. Coat the faces with a double application of pigmented curing compound under Section 28-1.07, "Curing" of the Standard Specifications. For partial slab replacements, place preformed sponge rubber expansion joint filler at new transverse joints in compliance with ASTM D 1752.

MEASUREMENT AND PAYMENT

If the Engineer accepts a test strip and it remains as part of the paving surface, the test strip is measured and paid for as jointed plain concrete pavement, seal pavement joint, and seal isolation joint as the case may be.

Transition panels to asphalt concrete pavement are measured and paid for as jointed plain concrete pavement.

Full compensation for providing a facility for and attending the prepaving conference is included in the contract price paid per cubic meter for Jointed Plain Concrete Pavement and no additional compensation is allowed therefor.

Full compensation for applying tack coat at transverse transition joints and end anchors is included in the contract price paid per cubic meter for Jointed Plain Concrete Pavement and no separate payment is made therefor.

If the curvature of a slab affects tie bar spacing and additional tie bars are required, they are included in the contract price paid per cubic meter for Jointed Plain Concrete Pavement and no additional compensation is allowed therefor.

10-1.77 PILING:

GENERAL

Piling shall conform to the provisions in Section 49, "Piling" of the Standard Specifications, and these Special Provisions.

Unless otherwise specified, welding of any work performed in conformance with the provisions in Section 49, "Piling" of the Standard Specifications, shall be in conformance with the requirements in AWS D1.1.

Attention is directed to "Project Information" and "Welding" of these Special Provisions.