

**Book 2 of 2**

**SPECIAL PROVISIONS**

**FOR CONSTRUCTION OF**

**Glen Canyon and Green Hills Road  
Bike Lane Project**



**CITY OF SCOTTS VALLEY  
PUBLIC WORKS DEPARTMENT  
February 26, 2018**

For use in connection with California Department of Transportation, Standard Specifications Dated 2015, Caltrans Revised Standard Specifications, Caltrans Standard Plans Dated 2015, Caltrans Revised Standard Plans, City of Scotts Valley Standard Details and Specifications, Labor Surcharge and Equipment Rental Rates, and the Director of Industrial Relations General Prevailing Wage Rate

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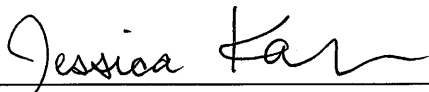
CITY OF SCOTTS VALLEY

GLEN CANYON AND GREEN HILLS ROAD  
BIKE LANE PROJECT

FEBRUARY 26, 2018

The Special Provisions contained herein have been prepared by or under the direction of the following Registered Engineer:

City of Scotts Valley



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Jessica Kahn  
Civil Engineer  
Registered Civil Engineer No. 81258  
Expires 9-30-19



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**CITY OF SCOTTS VALLEY**

**GLEN CANYON AND GREEN HILLS ROAD  
BIKE LANE PROJECT**

**TABLE OF CONTENTS**

SPECIAL PROVISIONS VOLUME I ..... 2  
SECTION 1 - GENERAL ..... 2  
SECTION 2 - BIDDING..... 2  
SECTION 3 - CONTRACT AWARD AND EXECUTION ..... 3  
    3-1.05 CONTRACT BONDS ..... 3  
    3-1.07 INSURANCE POLICIES ..... 3  
SECTION 4 – SCOPE OF WORK ..... 7  
SECTION 5 – CONTROL OF WORK ..... 7  
    5-1.13 SUBCONTRACTING ..... 7  
    5-1.30 FINAL INSPECTION CONTRACT ..... 8  
    5-1.32 AREAS FOR USE ..... 8  
SECTION 7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC ..... 9  
SECTION 8 PROSECUTION AND PROGRESS..... 10  
SECTION 9 PAYMENT ..... 10  
SPECIAL PROVISIONS VOLUME II – TECHNICAL SPECIFICATIONS ..... 12

# SPECIAL PROVISIONS VOLUME I

## SECTION 1 - GENERAL

### 1-1.01 GENERAL

The work embraced herein shall be done in accordance with the Standard Specifications dated 2015 and the Standard Plans dated 2015, of the California Department of Transportation insofar as the same may apply and these Special Provisions.

In case of conflict between the Standard Specifications and these Special Provisions, the Special Provisions shall take precedence over and be used in lieu of the conflicting portions.

### 1-1.07 DEFINITIONS

As used herein, unless the context otherwise requires, the following terms have the following meaning:

City- The City of Scotts Valley, located in Santa Cruz County, California

Department of Transportation -California Department of Transportation (Caltrans)

Engineer- The City Engineer of the City of Scotts Valley, State of California, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

State- The City of Scotts Valley, State of California

Standard Specifications- Means the City of Scotts Valley Standard Details and Specifications and the 2015 edition of the Standard Specifications of the State of California, Department of Transportation. Any reference therein to the State of California or a state agency, office or officer, shall be interpreted to refer to the City or its corresponding agency, office or officer acting under this contract.

## SECTION 2 - BIDDING

### 2-1.01 GENERAL

The bidder's attention is directed to the provisions in Section 2, "Bidding," of the Standard Specifications and these Special Provisions for the requirements and conditions which the bidder must observe in the preparation of the proposal form and the submission of the bid.

In addition to the subcontractors required to be listed in conformance with Section 2-1.10, "Subcontractor List," of the Standard Specifications, each proposal shall have listed therein the portion of work that will be done by each subcontractor listed. A sheet for listing the subcontractors is included in the Proposal.

The form of Bidder's Bond mentioned in the last paragraph in Section 2-1.34, "Bidders Security" of the Standard Specifications will be found following the signature page of the Proposal.

In conformance with Public Contract Code Section 7106, a Non-collusion Affidavit is included in the Proposal. Signing the Proposal shall also constitute signature of the Non-collusion Affidavit.

The contractor, sub recipient or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate. Each subcontract signed by the bidder must

include this assurance.

## **SECTION 3 - CONTRACT AWARD AND EXECUTION**

### **3-1.01 GENERAL**

The bidder's attention is directed to the provisions in Section 3, "Contract Award and Execution," of the Standard Specifications and these Special Provisions for the requirements and conditions concerning award and execution of contract.

The award of the contract, if it be awarded, will be to the lowest responsible bidder whose proposal complies with all the requirements prescribed.

### **3-1.05 CONTRACT BONDS**

The contractor shall provide, at the time of the execution of the agreement or contract for work, at his own expense, a surety bond in an amount equal to at least one hundred percent (100%) of the contract price as security for the faithful performance of said agreement. Contractor shall also provide, at the time of the execution of the agreement or contract for work, and at his own expense, a separate surety bond in the amount equal to at least one hundred percent (100%) of the contract price as security for the payment of all persons performing and furnishing materials in connection with said agreement. Sureties on each of said bonds shall be satisfactory to the City Attorney.

### **3-1.07 INSURANCE POLICIES**

Attention is directed to the provisions in Section 7-1.06, "Insurance," of the Standard Specifications.

**PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE:** Contractor shall take out and maintain during the life of this contract such Comprehensive General Liability and Property Damage insurance, by an insurer acceptable to Owner, that shall protect Contractor and any subcontractor performing work covered by this contract from any claims for bodily injury (including death) or property damage which may arise because of the nature of the work or from operations under this contract, whether such operations be by Contractor or by any subcontractor or anyone directly or indirectly employed by either of them, even though such damages are not caused by the negligence of Contractor or any subcontractor, or anyone employed by either of them. The public liability and property damage insurance shall name Owner, its officers, agents, employees, and any construction management firm hired by Owner as additional insured, and all insurance policies issued hereunder shall so state. The amounts of such insurance and their coverages shall not be less than the following:

1. **CONTRACTOR'S LIABILITY INSURANCE:** Shall provide bodily injury (including death) liability limits of not less than \$1,000,000 for each person, and \$5,000,000 for each accident or occurrence, and property damage liability limits of not less than \$500,000 for each accident or occurrence with an aggregate limit of \$500,000 for claims which may arise from the operations of Contractor in the performance of the work hereunder provided. This insurance must include coverage for contractual liability until the formal acceptance of the work by Owner. Contractor shall have the charge and care of the work, and shall take every necessary precaution against injury or damage to any part thereof from any cause whatever. Contractor shall rebuild, repair, restore and make good all injuries or damages to any portion of the work occasioned by any cause before its acceptance, and shall bear the expense thereof.
2. **AUTOMOBILE LIABILITY INSURANCE:** Shall cover all vehicles used in the performance of the contract and provide bodily injury (including death) liability limits of not less than \$500,000 for each person, and \$1,000,000 for each accident or occurrence, and property damage liability limits of not

less than \$500,000 for each accident or occurrence which may arise from the operations of Contractor in the performance of the work hereunder provided.

3. **WORKER'S COMPENSATION INSURANCE:** Before beginning the work, Contractor shall furnish to Owner satisfactory proof that Contractor has taken out for the period covered by the work under this contract, full compensation insurance for all persons employed directly by Contractor or through sub-contractors in carrying out the work contemplated under this contract, in accordance with the "Worker's Compensation and Insurance Act," Division IV of the Labor Code of the State of California and any acts amendatory thereof. Such insurance shall be maintained in full force and effect during the period covered by this contract.
4. Contractor shall provide Owner Protective Liability Insurance to owner that shall insure Owner, its officers, agents, employees, and any construction management firm hired by Owner, against any and all liability to all persons, including but not limited to Contractor, subcontractors and material persons for damages because of bodily injury (including death) or property damage, sustained by such person or persons, that may relate in any way to this project and other liability for damages which Contractor and/or subcontractors are required to insure under any provision herein. Said insurance shall be provided in the amounts and covering the subjects referenced in the introductory paragraph and subparagraph (1) of Paragraph B, above.

All insurance policies referenced above shall include a provision that the insurance will not be canceled or reduced unless Owner has been given thirty (30) days prior written notice by registered mail from the insurance carrier.

Owner and its agents, officers, employees, and any construction management firm hired by the owner shall be named as additional insured on the insurance policies specified in subparagraphs 1 and 2 above, and the insurance shall carry a cross-liability clause and a severability of interest clause.

All insurance policies specified in subparagraphs 1, 2, and 4 above shall include a provision that the insurance applies as primary, not excess to any other insurance carried by Owner, its officers, agents, employees, and any construction management firm hired by Owner and that all such other insurance (if any) shall be considered non-contributing for purposes of the application of such primary insurance herein required.

In lieu of any one or more of the insurance policies referenced in subparagraphs 1-4 above, the successful bidder may file with Owner evidence of an approved plan or self-insurance affording the same protection as required for the given insurance policy or policies reference above for which it is substituted.

Before execution of the contract, the successful bidder shall file with Owner a Certificate or Certificates of Insurance (Form ADM-11) which shall evidence and certify that all insurance coverages and provisions prescribed in this Paragraph B, have been obtained, or evidence of an approved plan of self-insurance covering any of the insurance and related provisions specified in subparagraphs 1-4 above for which the successful bidder is self-insured. All Certificates of Insurance and/or approved plan of self-insurance shall be reviewed and approved by the City Attorney prior to execution of the contract.



## CERTIFICATE OF INSURANCE

### Construction Contractor

This certifies to the City of Scotts Valley, California, that the following described policies have been issued to:

Insured \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

Location of insured operations: 1 Civic Center Drive, Scotts Valley, CA 95066

Description of work: **GLEN CANYON AND GREEN HILLS ROAD BIKE LANE PROJECT**

<b>COMPREHENSIVE GENERAL LIABILITY</b>	<b>BODILY INJURY</b>	<b>PROPERTY DAMAGE</b>
Name of Insurer	Each Person \$	Each Occurrence \$
Policy No.	Each Occurrence \$	Aggregate \$
Expiration Date	Combined Single Limit \$	

<b>COMPREHENSIVE AUTO LIABILITY</b>	<b>BODILY INJURY</b>	<b>PROPERTY DAMAGE</b>
Name of Insurer	Each Person \$	Each Occurrence \$
Policy No.	Each Occurrence \$	Aggregate \$
Expiration Date	Combined Single Limit \$	

<b>WORKERS COMPENSATION</b>	<b>BODILY INJURY</b>	<b>PROPERTY DAMAGE</b>
Name of Insurer	Policy Number	
	Expiration Date	
Employer's Liability \$		

All policies are in effect at this time and will not be canceled, limited, or allowed to expire without renewal until after 30 days written notice has been given to the certificate holder names on the top line. Any coverage afforded the certificate holder as an Additional Insured shall apply as primary and not excess to any insurance issued in the name of the certificate holder.

The following coverage or conditions are in effect:

The following coverage or conditions are in effect:

	YES	NO
Blanket Contractual Liability		X
Products and Complete Operations		X
City of Scotts Valley Named as Additional Insured		X
Cross Liability Clause		X
X, C, U, Hazards Included		X
Broad Form Property Damage		X
Personal Injury		X
Owner's and Contractor's Protective Liability		X

The City of Scotts Valley, its officers, agents and employees are named as additional primary insured on all the aforesaid policies and such policies comply in all respects with the provisions of the General Conditions ("Insurance") of the contract documents.

Date \_\_\_\_\_

\_\_\_\_\_  
Authorized Signature

At \_\_\_\_\_ for

\_\_\_\_\_  
Insurance Company

**Note:** Authorized signature may be the agent's if agent has placed insurance through an agency agreement with the insurer. If insurance is brokered, authorized signature must be that of official of insurer

## **SECTION 4 – SCOPE OF WORK**

### **4-1.01 GENERAL**

The work generally includes, but is not limited to, improvements to Green Hills Road, Glen Canyon Road, and South Navarra Drive as shown on the plans, in Scotts Valley, California. This work shall include the furnishing of all labor, materials, tools, and equipment for the construction of improvements on City property. The work to be done consists, in general, the construction of asphalt concrete pavement, asphalt roadway pavement widening, full depth reclamation, cold central plant recycling, crack seal, type II slurry seal, pavement markers, and other such items or detail work not mentioned herein that are required by the Plans, the Standard Specifications, Standard Plans, or these Special Provisions.

The Contractor shall notify all residents, businesses, and schools adjacent to the project area seven (7) calendar days and no more than 10 calendar days prior to the start of construction. If construction operations are delayed for any reason beyond the duration stipulated in the notices, the Contractor shall re-issue written notices that explain the delay and shall provide a revised schedule. All written notices to residents and businesses shall be submitted to the Engineer for review.

All costs involved in providing notification shall be included in the amount bid for the various bid items and no additional compensation will be allowed.

## **SECTION 5 – CONTROL OF WORK**

### **5-1.01 GENERAL**

Contractor shall construct the project during the hours of 8:00 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. Saturday, except for as noted under Sections 10-1.17, 10-2.23, and 10-2.51.

The Contractor shall request permission from Engineer a minimum of twenty-four (24) hours in advance of plans to work outside these work hours and/or days specified. The hours and/or days are subject to review and acceptance by Engineer. Contractor shall not work outside the normal working hours unless permitted by Engineer.

Should the Contractor work outside these working hours without written permission, that time will be deducted from his allowable working hours the following day.

Continued violation of the allowable working hours will result in a written notification by the Engineer. Contractor shall pay to the City of Scotts Valley the liquidated damages sum of one thousand, five hundred dollars (\$1500.00) per day for each and every violation of work hour restrictions. Any liquidated damages assessed will be deducted from the next scheduled progress payment.

No Contractor's employees, equipment, subcontractors, etc., or traffic control measures will be within the limits of the work outside the allowable work hours.

### **5-1.13 SUBCONTRACTING**

Attention is directed to the provisions in Section 5-1.13, "Subcontracting," and Section 2, "Bidding," and Section 3, "Contract Award and Execution," of the Standard Specifications and these Special Provisions.

Pursuant to the provisions in Section 1777.1 of the Labor Code, the Labor Commissioner publishes and distributes a list of contractors ineligible to perform work as a subcontractor on a public works project. This list of debarred contractors is available from the Department of Industrial Relations web site at

The Contractor shall return all moneys withheld in retention from the subcontractor within 30 days after receiving payment for work satisfactorily completed, even if the other contract work is not completed and has not been accepted in conformance with Section 5-1.46, "Final Inspection and Contract Acceptance," of the Standard Specifications. This requirement shall not be construed to limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor or deficient subcontract performance or noncompliance by a subcontractor.

### **5-1.30 FINAL INSPECTION CONTRACT ACCEPTANCE**

The requirements concerning acceptance of contract in Section 5-1.46, "Final Inspection and Acceptance," of the Standard Specifications are modified as follows:

When the Engineer has made the final inspection and determines that the contract work has been completed in all respects in accordance with the Plans and Specifications, and when the Contractor has approved in writing the final estimate on the total amount payable for the performance of the contract, the Engineer will recommend that the City Council formally accept the contract, and immediately upon and after such acceptance by the City Council, the Contractor will be relieved of the duty of maintaining and protecting the work as a whole, will not be required to perform any further work thereon, and shall be relieved of his responsibility for injury to persons or property, or damage to the work which occurs after the formal acceptance by the City Council.

### **5-1.32 AREAS FOR USE**

Prior to the Contractor's use and/or occupation of any third-party lands for the purpose of stockpiling materials or equipment, the Contractor shall obtain written permission for ingress and egress which also indemnifies the City for any and all damages which may be caused by the Contractor's activities.

### **5-1.47 GUARANTEE**

Contractor warrants and guarantees to Owner and Engineer that all work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to Contractor. All defective work, whether or not in place, may be rejected, corrected or accepted as provided in the specifications.

- A. If any work is found to be defective without one year after the date of final payment, or such longer period of time as may be prescribed by law or by the terms of any applicable special guarantee required by the Contract Documents, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions, either correct such defective work, or, if it has been rejected by Owner, remove it from the site and replace it with non defective work. If Contractor does not comply with the terms of such instructions within (14) days unless approved by Owner, or in an emergency where delay would cause serious risk or loss or damage, Owner may have the defective work corrected or the rejected work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by Contractor. Contractor shall also pay for any damage done to other work, other property, or persons which occurred as a result of the defective work within the one-year correction period.
- B. If, instead of requiring correction or removal and replacement of defective work, Owner (and, prior to Engineer's recommendation of final payment, also Engineer) prefers to accept it, Owner may do so. In such case, if acceptance occurs prior to Engineer's recommendation of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Price; or, if the acceptance occurs

after such recommendation, an appropriate amount shall be paid by Contractor to Owner.

## **SECTION 7 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC**

### **7-1.02I(2) NONDISCRIMINATION**

Attention is directed to the following Notice that is required by CA Code Regs §§ 8107 and 8203: STANDARD CALIFORNIA NONDISCRIMINATION CONSTRUCTION CONTRACT SPECIFICATIONS (GOV. CODE, SECTION 12990) .

Your attention is called to the "Nondiscrimination Clause", set forth in Section 7-1.02I(2), "Nondiscrimination," of the Standard Specifications, which is applicable to all nonexempt state contracts and subcontracts, and to the "Standard California Nondiscrimination Construction Contract Specifications" set forth therein. The Specifications are applicable to all nonexempt state construction contracts and subcontracts of \$5,000 or more.

### **7-1.02K(2) WAGES**

Attention is directed to Section 7-1.02K(2), " Wages," of the Standard Specifications.

The general prevailing wage rates determined by the Director of Industrial Relations, for the county or counties in which the work is to be done, are available at the City of Scotts Valley address. These wage rates are not included in the Proposal and Contract for the project. Changes, if any, to the general prevailing wage rates will be available at the same location.

### **7-1.04 PUBLIC SAFETY**

The Contractor shall provide for the safety of traffic and the public in conformance with the provisions in Section 7-1.04, "Public Safety," of the Standard Specifications and these special provisions.

In accordance with state law and generally accepted construction practices, Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. The services of Engineer or Inspector in conducting construction review of Contractor's performance are not intended to include review of the adequacy of Contractor's work methods, equipment, bracing or scaffolding or safety measures in, on, or near the construction site.

Contractor shall at all times conduct work as to ensure the least possible obstruction to traffic and inconvenience to pedestrians in the vicinity of the work and to ensure the protection of persons and property. No road, street, walkway, or building corridor shall be closed except with the permission of the Engineer. The Contractor shall not be permitted to park or service any equipment in areas that the Engineer may deem a visual obstruction to traffic or that may create an unsafe condition. The Contractor shall not be permitted to stockpile any materials in areas that the Engineer may deem a visual obstruction to traffic or that may create an unsafe condition.

Suspended loads or equipment shall not be moved nor positioned over public traffic or pedestrians.

Maintain access to all fire hydrants within the project area to the satisfaction of the Scotts Valley Fire District. Obtain their written approval prior to using any hydrant within the City of Scotts Valley.

Maintain access to adjacent parking areas by motor vehicles at all times, and make provisions for the  
Glen Canyon and Green Hills Road Special Provisions  
Bike Lane Project 9

safe passage of pedestrians around walkway and parking areas at all times.

Comply with the California MUTCD for all items related to traffic control.

Contractor shall provide and maintain all fencing, barricades, guardrails, bridges, warning signs, flaggers, and lights as are necessary to protect Contractor's own personnel and authorized visitors to the project site.

Full compensation for conforming to the requirements in this section "Public Safety," including furnishing and installing traffic cones or delineators, temporary railing (Type K) and temporary crash cushion modules, shall be considered as included in the contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

## **SECTION 8 PROSECUTION AND PROGRESS**

### **8-1.01 GENERAL**

Attention is directed to the provisions in Section 8-1.04, "Start of Job Site Activities," in Section 8-1.05, "Time," and in Section 8-1.10, "Liquidated Damages," of the Standard Specifications and these Special Provisions.

The Contractor shall begin work within **10** calendar days after the receipt of Notice to Proceed from the City.

This work shall be diligently prosecuted to completion before the expiration of **60 CALENDAR DAYS** beginning on the fifteenth calendar day after approval of the contract.

The Contractor shall pay to the City of Scotts Valley the sum of **\$250 per day, for each and every calendar day's** delay in finishing the work in excess of the number of working days prescribed above.

## **SECTION 9 PAYMENT**

### **9-1.04 FORCE ACCOUNT**

#### **9-1.04A GENERAL**

The fourth paragraph in SECTION 9-1.04A, "Work Performed by Contractor," of the Standard Specifications is amended to read:

When extra work to be paid for on a force account basis is performed by a subcontractor an additional markup of five percent will be added to the total cost of said extra work including all markups specified in this SECTION 9-1.04. Said additional five-percent markup shall reimburse the Contractor for additional administrative costs and no other additional payment will be made by reason of performance of the extra work by a subcontractor.

#### **9-1.04D EQUIPMENT RENTAL**

The first paragraph in SECTION 9-1.04D, "Equipment Rental," of the Standard Specifications is amended to read:

The Contractor will be paid for the use of equipment at the rental rates listed for such equipment in the Department of Transportation publication entitled Labor Surcharge And Equipment Rental Rates, which is in effect on the date upon which the work is accomplished and which is a part of the

contract, regardless of ownership and rental or other agreement, if such may exist, for use of such equipment entered into by the Contractor, except that for those pieces of equipment with a rental rate of \$10.00 per hour or less as listed in the Labor Surcharge And Equipment Rental Rates publication and which are rented from a local equipment agency, other than Contractor owned, the Contractor will be paid at the hourly rate shown on the rental agency invoice or agreement for the time used on force account work as provided in SECTION 9-1.04D(2), "Equipment on the Job Site." If a minimum equipment rental amount is required by the local equipment rental agency, the actual amount charged will be paid to the Contractor. If it is deemed necessary by the Engineer to use equipment not listed in said publication, a suitable rental rate for such equipment will be established by the Engineer. The Contractor may furnish any cost data which might assist the Engineer in the establishment of such rental rate. If the rental rate established by the Engineer is \$10.00 per hour or less, the provisions above concerning rental of equipment from a local equipment agency shall apply.

The sixth paragraph in said SECTION 9-1.04D is amended to read:

Individual pieces of equipment or tools not listed in said publication and having a replacement value of \$500 or less, whether or not consumed by use, shall be considered to be small tools and no payment will be made therefor.

SECTION 9-1.04D "Equipment Rental," of the Standard Specifications is amended by adding SECTION 9-1.04D(5), "Non-Owner-Operated Dump Truck Rental," as follows:

9-1.04D(5) Non-Owner-Operated Dump Truck Rental.--Dump truck rental shall conform to the provisions of Sections 9-1.04D, "Equipment Rental," 9-1.04D(2), "Equipment on the Job Site," and 9-1.04D(3), "Equipment Not On the Job Site and Not Required for Original-Contract Work," except as follows:

1. Fully maintained and operated rental dump trucks used in the performance of extra work paid for on a force account basis will be paid for at the same hourly rate paid by the Contractor for use of fully maintained and operated rental dump trucks in performing contract item work.
2. In the absence of contract item work requiring dump truck rental, the Engineer will establish an hourly rental rate to be paid. The Contractor shall provide the Engineer with complete information on the hourly rental rates available for rental of fully maintained and operated dump trucks.
3. The provisions in SECTION 9-1.04B, "Labor," shall not apply to operators of rented dump trucks.
4. The rental rates listed for dump trucks in the Department of Transportation publication entitled Labor Surcharge And Equipment Rental Rates shall not apply.
5. To the total of the rental costs for fully maintained and operated dump trucks there will be added a markup of 15 percent. No other markups will be made by reason of performance of the work by a subcontractor or for labor.

**SPECIAL PROVISIONS VOLUME II – TECHNICAL SPECIFICATIONS**



**SPECIFICATION SECTIONS TABLE OF CONTENTS**

SECTION 01 20 00 – SPECIAL PROVISIONS AND MEASUREMENT AND PAYMENT

SECTION 03 30 00 - CONCRETE SITE WORK

SECTION 03 53 00 – CONCRETE RESURFACING

SECTION 31 05 13 - EARTHWORK

SECTION 31 10 00 - SITE CLEARING

SECTION 32 11 23 - AGGREGATE BASE COURSE

SECTION 32 11 23.1 – FULL DEPTH RECLAMATION

SECTION 32 12 16 - ASPHALT PAVEMENT

SECTION 32 12 16.1 – COLD CENTRAL PLANT RECYCLING

SECTION 32 17 23.1 – PAVEMENT MARKINGS



## SECTION 012000 – SPECIAL PROVISIONS AND MEASUREMENT AND PAYMENT

### PART 1 GENERAL

#### 1.1 SUMMARY

##### A. Section Includes

This project involves the construction of asphalt concrete pavement, asphalt roadway pavement widening, full depth reclamation, cold central plant recycling, crack seal, type II slurry seal, and pavement markers. Such other items or details, not mentioned above, which are required by the plans, Standard Specifications, or these special provisions shall be performed, placed, constructed or installed.

#### 1.2 SPECIAL PROVISIONS

##### A. ORDER OF WORK.

A minimum of one lane shall be kept open for public traffic at all times.

Before lane closure will take place, warning signs for road closure shall be installed at road intersections identified elsewhere in these special provisions, with the specific locations determined by the Engineer. Coordination with the City Engineer is mandatory at least 72 hours in advance of all road closures.

The installation of temporary railings shall be complete at each required location before existing facilities are disturbed or before excavation or other work is begun which would create a hazard at the location. Temporary railings shall not be removed until such hazards no longer exist and until such removal is approved by the Engineer.

Erosion control materials shall be applied by October 15 or sooner in the year any grading work is performed.

Attention is directed to the Plans. Where full depth reclamation areas are identified, the contractor shall mill and remove millings, prior to operations for full depth reclamation. The placement of cold central plant recycling asphalt concrete pavement shall take place after completion of all full depth reclamation operations. The placement of hot mix asphalt layer shall take place after completion of cold central plant recycling operations.

Full compensation for any costs occasioned by compliance with this section shall be considered as included in the prices paid for the various contract items of work and no separate payment will be made therefor.

##### B. MOBILIZATION.

Full compensation for any necessary Mobilization required shall be considered as included in the prices paid for the various contract items and no separate payment will be made therefor.

##### C. CONSTRUCTION SITE MANAGEMENT

Construction site management shall consist of controlling potential sources of water pollution before they come in contact with storm water systems or watercourses. The Contractor shall control material pollution and manage waste and non-storm water existing at the construction site by implementing effective handling, storage, use, and disposal practices.

Attention is directed to "Water Pollution" of these special provisions regarding the Contractor's appointment of a water pollution control manager (WPCM) for the project.

The Contractor shall train all employees and subcontractors regarding:

- 1) Material pollution prevention and control
- 2) Waste management
- 3) Non-storm water management
- 4) Identifying and handling hazardous substances
- 5) Potential dangers to humans and the environment from spills and leaks or exposure to toxic or hazardous substances

Training shall take place before starting work on this project. New employees shall receive the complete training before starting work on this project. The Contractor shall have regular meetings to discuss and reinforce spill prevention and control; material delivery, storage, use, and disposal; waste management; and non-storm water management procedures.

Instructions for material and waste handling, storage, and spill reporting and cleanup shall be posted at all times in an open, conspicuous, and accessible location at the construction site.

Nonhazardous construction site waste and excess material shall be recycled when practical or disposed of.

Vehicles and equipment at the construction site shall be inspected by the WPCM on a frequent, predetermined schedule, and by the operator each day of use. Leaks shall be repaired immediately, or the vehicle or equipment shall be removed from the construction site.

#### D. SPILL PREVENTION AND CONTROL

The Contractor shall implement spill and leak prevention procedures when chemicals or hazardous substances are stored. Spills of petroleum products; substances listed under CFR Title 40, Parts 110, 117, and 302; and sanitary and septic waste shall be contained and cleaned up as soon as is safe.

Minor spills involve small quantities of oil, gasoline, paint, or other material that can be controlled by the first responder upon discovery of the spill. Cleanup of minor spills includes:

- 1) Containing the spread of the spill
- 2) Recovering the spilled material using absorption
- 3) Cleaning the contaminated area
- 4) Disposing of contaminated material promptly and properly

Semi-significant spills are those that can be controlled by the first responder with the help of other personnel. Cleanup of semi-significant spills shall be immediate. Cleanup of semi-significant spills includes:

- 1) Containing the spread of the spill
- 2) Recovering the spilled material using absorption if the spill occurs on paved or an impermeable surface
- 3) Containing the spill with an earthen dike and digging up contaminated soil for disposal if the spill occurs on dirt

- 4) Covering the spill with plastic or other material to prevent contaminating runoff if the spill occurs during precipitation
- 5) Disposing of contaminated material promptly and properly.

Significant or hazardous spills are those that cannot be controlled by construction personnel. Notifications of these spills shall be immediate. The following steps shall be taken:

- 1) Construction personnel shall not attempt to cleanup the spill until qualified staff have arrived
- 2) Notify the Engineer and follow up with a written report
- 3) Obtain the services of a spills contractor or hazardous material team immediately
- 4) Notify the local emergency response team by dialing 911 and city officials at the emergency phone numbers kept on the construction site
- 5) Notify the Governor's Office of Emergency Services Warning Center at (805) 852-7550
- 6) Notify the National Response Center at (800) 424-8802 regarding spills of Federal reportable quantities in conformance with CFR Title 40, Parts 110, 119, and 302
- 7) Notify other agencies as appropriate, including:
  - a) Fire Department
  - b) Public Works Department
  - c) Coast Guard
  - d) Highway Patrol
  - e) City Police or County Sheriff Department
  - f) Department of Toxic Substances
  - g) California Division of Oil and Gas
  - h) Cal OSHA
  - i) Regional Water Resources Control Board

The WPCM shall oversee and enforce proper spill prevention and control measures. Minor, semi-significant, and significant spills shall be reported to the Contractor's WPCM who shall notify the Engineer immediately.

The Contractor shall prevent spills from entering storm water runoff before and during cleanup. Spills shall not be buried or washed with water.

The Contractor shall keep material or waste storage areas clean, well organized, and equipped with enough cleanup supplies for the material being stored. Plastic shall be placed under paving equipment when not in use to catch drips.

#### E. MATERIAL MANAGEMENT

Material shall be delivered, used, and stored for this contract in a manner that minimizes or eliminates discharge of material into the air, storm drain systems, or watercourses.

The Contractor shall implement the practices described in this section when taking delivery of, using, or storing the following materials:

- 1) Hazardous chemicals including:
  - a) Acids
  - b) Lime
  - c) Glues
  - d) Adhesives

- e) Paints
  - f) Solvents
  - g) Curing compounds
- 
- 2) Soil stabilizers and binders
  - 3) Fertilizers
  - 4) Detergents
  - 5) Plaster
  - 6) Petroleum products including:
    - a) Fuel
    - b) Oil
    - c) Grease
  - 7) Asphalt components and concrete components
  - 8) Pesticides and herbicides

The Contractor shall supply the Material Safety Data Sheet to the Engineer for material used or stored. The Contractor shall keep an accurate inventory of material delivered and stored at the construction site.

Employees trained in emergency spill cleanup procedures shall be present when hazardous materials or chemicals are unloaded.

The Contractor shall use recycled or less hazardous products when practical.

### **Material Storage**

The Contractor shall store liquids, petroleum products, and substances listed in CFR Title 40, Parts 110, 117, and 302 in containers or drums approved by the United States Environmental Protection Agency, and place them in secondary containment facilities.

Secondary containment facilities shall be impervious to the materials stored there for a minimum contact time of 72 hours.

Throughout the rainy season secondary containment facilities shall be covered during non-working days and when precipitation is predicted. Secondary containment facilities shall be adequately ventilated.

The Contractor shall keep the secondary containment facility free of accumulated rainwater or spills. After precipitation, or in the event of spills or leaks, accumulated liquid shall be collected and placed into drums within 24 hours. These liquids shall be handled as hazardous waste in accordance with the provisions in "Hazardous Waste" of these special provisions, unless testing determines them to be nonhazardous.

Incompatible materials, such as chlorine and ammonia, shall not be stored in the same secondary containment facility.

Materials shall be stored in the original containers with the original product labels maintained in legible condition. Damaged or illegible labels shall be replaced immediately.

The secondary containment facility shall have the capacity to contain precipitation from a 24-hour-long 25-year storm and 10 percent of the aggregate volume of all containers, or all of the

volume of the largest container within the facility, whichever is greater.

The Contractor shall store bagged or boxed material on pallets. Throughout the rainy season, bagged or boxed material shall be protected from wind and rain during non-working days and when precipitation is predicted.

The Contractor shall provide sufficient separation between stored containers to allow for spill cleanup or emergency response access. Storage areas shall be kept clean, well organized, and equipped with cleanup supplies appropriate for the materials being stored.

The Contractor shall repair or replace perimeter controls, containment structures, covers, and liners as needed. Storage areas shall be inspected before and after precipitation, and at least weekly during other times.

### **Stockpile Management**

The Contractor shall reduce or eliminate potential air and water pollution from stockpiled material including soil, paving material, or pressure treated wood. Stockpiles shall be located out of floodplains when possible, and at least 50 feet from concentrated flows of storm water, drainage courses, or inlets unless written approval is obtained from the Engineer.

The Contractor may discontinue adding or removing material for up to 21 days and a stockpile will still be considered active.

The Contractor shall protect active stockpiles with plastic or geotextile cover, soil stabilization measures, or with linear sediment barrier when precipitation is predicted. Active stockpiles of cold mix asphalt concrete shall be placed on an impervious surface and covered with plastic when precipitation is predicted.

The Contractor shall protect inactive soil stockpiles with a plastic or geotextile cover, or with soil stabilization measures at all times during the rainy season. A linear sediment barrier around the perimeter of the stockpile shall also be used. During the non-rainy season soil stockpiles shall be covered and protected with a linear sediment barrier when precipitation is predicted. The Contractor shall control wind erosion during dry weather.

Stockpiles of portland cement concrete rubble, asphalt concrete (AC), hot mix asphalt (HMA), AC and HMA rubble, aggregate base, or aggregate subbase shall be covered with plastic or geotextile, or protected with a linear sediment barrier at all times during the rainy season, and when precipitation is predicted during the non-rainy season.

Stockpiles of cold mix asphalt concrete shall be placed on and covered with impermeable material at all times during the rainy season, and when precipitation is predicted during the non-rainy season.

Stockpiles of pressure treated wood shall be covered with impermeable material and placed on pallets at all times during the rainy season, and when precipitation is predicted during the non-rainy season.

The Contractor shall repair or replace linear sediment barriers and covers as needed or as directed by the Engineer to keep them functioning properly. Sediment shall be removed when it accumulates to 1/3 of the linear sediment barrier height.

F. WASTE MANAGEMENT

**Solid Waste**

The Contractor shall not allow litter or debris to accumulate anywhere on the construction site, including storm drain grates, trash racks, and ditch lines. The Contractor shall pick up and remove trash and debris from the construction site at least once a week. The WPCM shall monitor solid waste storage and disposal procedures on the construction site. The Contractor shall provide enough dumpsters of sufficient size to contain the solid waste generated by the project. Dumpsters shall be emptied when refuse reaches the fill line. Dumpsters shall be watertight. The Contractor shall not wash out dumpsters on the construction site. The Contractor shall provide additional containers and more frequent pickup during the demolition phase of construction.

Solid waste includes:

1. Brick
2. Mortar
3. Timber
4. Metal scraps
5. Sawdust
6. Pipe
7. Electrical cuttings
8. Non-hazardous equipment parts
9. Styrofoam and other packaging materials
10. Vegetative material and plant containers from highway planting
11. Litter and smoking material, including litter generated randomly by the public

Trash receptacles shall be provided and used in the Contractor's yard, field trailers, and locations where workers gather for lunch and breaks.

**Hazardous Waste**

The Contractor shall implement hazardous waste management practices when waste is generated on the construction site from the following substances:

- 1) Petroleum products
- 2) Asphalt products
- 3) Concrete curing compound
- 4) Pesticides
- 5) Acids
- 6) Paints
- 7) Stains
- 8) Solvents
- 9) Wood preservatives
- 10) Roofing tar
- 11) Materials classified as hazardous by California Code of Regulations, Title 22, Division 4.5 or listed in CFR Title 40, Parts 110, 117, 261, or 302

Nothing in these special provisions shall relieve the Contractor of the responsibility for compliance with Federal, state, and local laws regarding storage, handling, transportation, and disposal of hazardous wastes.

The WPCM shall oversee and enforce hazardous waste management practices. Production of hazardous materials and hazardous waste on the construction site shall be kept to a minimum.

Perimeter controls, containment structures, covers, and liners shall be repaired or replaced when damaged.

The Contractor shall have a laboratory certified by the Department of Health Services (DHS) sample and test waste when hazardous material levels are unknown to determine safe methods for storage and disposal.

The Contractor shall segregate potentially hazardous waste from nonhazardous waste at the construction site. Hazardous waste shall be handled, stored, and disposed of as required in California Code of Regulations, Title 22, Division 4.5, Section 66262.34 and in CFR Title 49, Parts 261, 262, and 263.

The Contractor shall store hazardous waste in sealed containers constructed and labeled with the contents and date accumulated as required in California Code of Regulations, Title 22, Division 4.5; and in CFR Title 49, Parts 172, 173, 178, and 179. Hazardous waste containers shall be kept in temporary containment facilities conforming to the provisions in "Material Storage" of these special provisions.

There shall be adequate storage volume and containers shall be conveniently located for hazardous waste collection. Containers of hazardous waste shall not be overfilled and hazardous wastes shall not be mixed. Containers of dry waste that are not watertight shall be stored on pallets. The Contractor shall not allow potentially hazardous waste to accumulate on the ground. Hazardous waste shall be stored away from storm drains, watercourses, moving vehicles, and equipment.

The Contractor shall clean water based or oil based paint from brushes or equipment within a contained area and shall not contaminate soil, watercourses, or storm drain systems. Paints, thinners, solvents, residues, and sludges that cannot be recycled or reused shall be disposed of as hazardous waste. When thoroughly dry, latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths shall be disposed of as solid waste.

The Contractor shall dispose of hazardous waste within 90 days of being generated. Hazardous waste shall be disposed of by a licensed hazardous waste transporter using uniform hazardous waste manifest forms and taken to a Class I Disposal Site. A copy of the manifest shall be provided to the Engineer.

### **Contaminated Soil**

The Contractor shall identify contaminated soil from spills or leaks by noticing discoloration, odors, or differences in soil properties. Soil with evidence of contamination shall be sampled and tested by a laboratory certified by DHS. If levels of contamination are found to be hazardous, the soil shall be handled and disposed of as hazardous waste.

The Contractor shall prevent the flow of water, including ground water, from mixing with contaminated soil by using one or a combination of the following measures:

- 1) Berms
- 2) Cofferdams
- 3) Grout curtains
- 4) Freeze walls
- 5) Concrete seal course

If water mixes with contaminated soil and becomes contaminated, the water shall be sampled and



tested by a laboratory certified by the DHS. If levels of contamination are found to be hazardous, the water shall be handled and disposed of as hazardous waste.

### **Concrete Waste**

The Contractor shall implement practices to prevent the discharge of portland cement concrete, AC, or HMA waste into storm drain systems or watercourses.

Portland cement concrete, AC, or HMA waste shall be collected at the following locations and disposed of:

- 1) Where concrete material, including grout, is used
- 2) Where concrete dust and debris result from demolition
- 3) Where sawcutting, coring, grinding, grooving, or hydro-concrete demolition of portland cement concrete, AC, or HMA creates a residue or slurry
- 4) Where concrete trucks or other concrete-coated equipment is cleaned at the construction site.

### **Sanitary and Septic Waste**

Wastewater from sanitary or septic systems shall not be discharged or buried within the Department right of way. The WPCM shall inspect sanitary or septic waste storage and monitor disposal procedures at least weekly. Sanitary facilities that discharge to the sanitary sewer system shall be properly connected and free from leaks.

The Contractor shall obtain written approval from the local health agency, city, county, and sewer district before discharging from a sanitary or septic system directly into a sanitary sewer system, and provide a copy to the Engineer. The Contractor shall comply with local health agency requirements when using an on-site disposal system.

### **Liquid Waste**

The Contractor shall not allow construction site liquid waste, including the following, to enter storm drain systems or watercourses:

- 1) Drilling slurries or fluids
- 2) Grease-free or oil-free wastewater or rinse water
- 3) Dredgings
- 4) Liquid waste running off a surface including wash or rinse water
- 5) Other non-storm water liquids not covered by separate permits

The Contractor shall hold liquid waste in structurally sound, leak proof containers such as:

- 1) Sediment traps
- 2) Roll-off bins
- 3) Portable tanks

Liquid waste containers shall be of sufficient quantity and volume to prevent spills and leaks. The containers shall be stored at least 50 feet from storm drains, watercourses, moving vehicles, and equipment.

The Contractor shall remove and dispose of deposited solids from sediment traps as provided in "Solid Waste" of these special provisions, unless determined infeasible by the Engineer.

Liquid waste may require testing to determine hazardous material content before disposal.

Drilling fluids and residue shall be disposed of outside the highway right of way. If the Engineer determines that an appropriate location is available, fluids and residue exempt under California Code of Regulations, Title 23, Section 2511(g) may be dried by infiltration and evaporation in a leak proof container. The remaining solid waste may be disposed of as provided in "Solid Waste" of these special provisions.

#### G. NON-STORM WATER MANAGEMENT

##### **Water Control and Conservation**

The Contractor shall prevent erosion or the discharge of pollutants into storm drain systems or watercourses by managing the water used for construction operations. The Contractor shall obtain the Engineer's approval before washing anything on the construction site with water that could discharge into a storm drain system or watercourse. Discharges shall be reported to the Engineer immediately.

The Contractor shall implement water conservation practices when water is used on the construction site. Irrigation areas shall be inspected and watering schedules shall be adjusted to prevent erosion, excess watering, or runoff. The Contractor shall shut off the water source to broken lines, sprinklers, or valves, and they shall be repaired as soon as possible. When possible, water from waterline flushing shall be reused for landscape irrigation. Paved areas shall be swept and vacuumed, not washed with water.

Construction water runoff, including water from water line repair, shall be directed to areas to infiltrate into the ground and shall not be allowed to enter storm drain systems or watercourses. Spilled water shall not be allowed to escape water truck filling areas. When possible, the Contractor shall direct water from off-site sources around the construction site, or shall minimize contact with the construction site.

##### **Illegal Connection and Discharge Detection and Reporting**

The Contractor shall inspect the construction site and the site perimeter before beginning work for evidence of illegal connections, discharges, or dumping. Subsequently, the construction site and perimeter shall be inspected on a frequent, predetermined schedule.

The Contractor shall immediately notify the Engineer when illegal connections, discharges, or dumping are discovered. The Contractor shall take no further action unless directed by the Engineer. Unlabeled or unidentifiable material shall be assumed to be hazardous.

The Contractor shall look for the following evidence of illegal connections, discharges, or dumping:

1. Debris or trash piles
2. Staining or discoloration on pavement or soils
3. Pungent odors coming from drainage systems
4. Discoloration or oily sheen on water
5. Stains or residue in ditches, channels or drain boxes
6. Abnormal water flow during dry weather
7. Excessive sediment deposits
8. Nonstandard drainage junction structures
9. Broken concrete or other disturbances near junction structures

### **Vehicle and Equipment Cleaning**

The Contractor shall limit vehicle and equipment cleaning or washing on the construction site to that necessary to control vehicle tracking or hazardous waste. Vehicles and equipment shall not be cleaned on the construction site with soap, solvents, or steam until the Engineer has been notified. The resulting waste shall be contained and recycled, or disposed of as provided in "Liquid Waste" or "Hazardous Waste" of these special provisions, whichever is applicable. The Contractor shall not use diesel to clean vehicles or equipment, and shall minimize the use of solvents.

The Contractor shall clean or wash vehicles and equipment in a structure equipped with disposal facilities. If using a structure is not possible, vehicles and equipment shall be cleaned or washed in an outside area with all the following characteristics:

- 1) Located at least 50 feet from storm drainage systems or watercourses
- 2) Paved with AC, HMA, or portland cement concrete
- 3) Surrounded by a containment berm
- 4) Equipped with a sump to collect and dispose of wash water

When washing vehicles or equipment with water, the Contractor shall use as little water as possible. Hoses shall be equipped with a positive shutoff valve.

Wash racks shall discharge to a recycle system or to another system approved by the Engineer. Sumps shall be inspected regularly, and liquids and sediments shall be removed as needed.

### **Vehicle and Equipment Fueling and Maintenance**

The Contractor shall fuel or perform maintenance on vehicles and equipment off the construction site whenever practical. When fueling or maintenance must be done at the construction site, the Contractor shall designate a site, or sites, and obtain approval from the Engineer before using. The fueling or maintenance site shall be protected from storm water, shall be on level ground, and shall be located at least 50 feet from drainage inlets or watercourses. The WPCM shall inspect the fueling or maintenance site regularly. Mobile fueling or maintenance shall be kept to a minimum.

The Contractor shall use containment berms or dikes around the fueling and maintenance area. Adequate amounts of absorbent spill cleanup material and spill kits shall be kept in the fueling and maintenance area and on fueling trucks. Spill cleanup material and kits shall be disposed of immediately after use. Drip pans or absorbent pads shall be used during fueling or maintenance unless performed over an impermeable surface.

Fueling or maintenance operations shall not be left unattended. Fueling nozzles shall be equipped with an automatic shutoff control. Vapor recovery fueling nozzles shall be used where required by the Air Quality Management District. Nozzles shall be secured upright when not in use. Fuel tanks shall not be topped-off.

The Contractor shall recycle or properly dispose of used batteries and tires.

### **Material and Equipment Used Over Water**

Drip pans and absorbent pads shall be placed under vehicles or equipment used over water, and an adequate supply of spill cleanup material shall be kept with the vehicle or equipment. Drip pans or plastic sheeting shall be placed under vehicles or equipment on docks, barges, or other surfaces over water when the vehicle or equipment will be idle for more than one hour.

The Contractor shall provide watertight curbs or toe boards on barges, platforms, docks, or other

surfaces over water to contain material, debris, and tools. Material shall be secured to prevent spills or discharge into water due to wind.

#### **Structure Removal Over or Adjacent to Water**

The Contractor shall not allow demolished material to enter storm water systems or watercourses. The Contractor shall use covers and platforms approved by the Engineer to collect debris. Attachments shall be used on equipment to catch debris on small demolition operations. Debris catching devices shall be emptied regularly and debris shall be handled as provided in "Waste Management" of these special provisions.

The WPCM shall inspect demolition sites within 50 feet of storm water systems or watercourses every day.

#### **Paving, Sealing, Sawcutting, and Grinding Operations**

The Contractor shall prevent the following material from entering storm drain systems or water courses:

- 1) Cementitious material
- 2) Asphaltic material
- 3) Aggregate or screenings
- 4) Grinding or sawcutting residue
- 5) Pavement chunks
- 6) Shoulder backing

The Contractor shall cover drainage inlets and use linear sediment barriers to protect downhill watercourses until paving, sealing, sawcutting, or grinding operations are completed and excess material has been removed. Drainage inlets and manholes shall be covered during the application of seal coat, tack coat, slurry seal, or fog seal.

During the rainy season or when precipitation is predicted, paving, sawcutting, and grinding operations shall be limited to places where runoff can be captured. Seal coat, tack coat, slurry seal, or fog seal operations shall not begin if precipitation is predicted for the application or the curing period. The Contractor shall not excavate material from existing roadways during precipitation.

The Contractor shall vacuum up slurry from sawcutting operations immediately after the slurry is produced. Slurry shall not be allowed to run onto lanes open to public traffic or off the pavement.

The Contractor shall collect residue from portland cement concrete grinding operations with a vacuum attachment on the grinding machine. The residue shall not be left on the pavement or allowed to flow across the pavement.

Material excavated from existing roadways may be stockpiled as provided in "Stockpile Management" of these special provisions if approved by the Engineer. AC or HMA chunks used in embankment shall be placed above the water table and covered by at least one foot of material.

Substances used to coat asphalt trucks and equipment shall not contain soap, foaming agents, or toxic chemicals.

#### **Thermoplastic Striping and Pavement Markers**

Before obliterating any traffic stripes, pavement markings, and pavement markers to be replaced at the same location, reference the stripes, markings, and markers. Include limits and transitions

with control points to reestablish the new stripes, markings, and markers. Submit your references to the control points at least 5 business days before obliterating the stripes, markings, and markers.

Thermoplastic striping and preheating equipment shutoff valves shall work properly at all times when on the construction site. The Contractor shall not preheat, transfer, or load thermoplastic within 50 feet of drainage inlets or watercourses. The Contractor shall not fill the preheating container to more than 6 inches from the top. Truck beds shall be cleaned daily of scraps or melted thermoplastic.

The Contractor shall not unload, transfer, or load bituminous material for pavement markers within 50 feet of drainage inlets or watercourses. All pressure shall be released from melting tanks before removing the lid to fill or service. Melting tanks shall not be filled to more than 6 inches from the top.

The Contractor shall collect bituminous material from the roadway after marker removal.

### **Concrete Curing**

The Contractor shall not overspray chemical curing compound. Drift shall be minimized by spraying as close to the concrete as possible. Drainage inlets shall be covered before applying curing compound.

The Contractor shall minimize the use and discharge of water by using wet blankets or similar methods to maintain moisture when curing concrete.

### **Concrete Finishing**

The Contractor shall collect and dispose of water and solid waste from high-pressure water blasting. Drainage inlets within 50 feet shall be covered before sandblasting. The nozzle shall be kept as close to the surface of the concrete as possible to minimize drift of dust and blast material. Blast residue may contain hazardous material.

Containment structures for concrete finishing operations shall be inspected for damage before each day of use and before predicted precipitation. Liquid and solid waste shall be removed from the containment structure after each work shift.

## **H. DEWATERING**

Dewatering shall consist of discharging accumulated storm water, ground water, or surface water from excavations or temporary containment facilities. The Contractor shall discharge water within the limits of the project.

Dewatering discharge shall not cause erosion, scour, or sedimentary deposits that impact natural bedding materials.

The Contractor shall conduct dewatering activities in accordance with the Field Guide for Construction Dewatering available at:

<http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm>

Before dewatering the Contractor shall submit a Dewatering and Discharge Plan to the Engineer in conformance with "Water Pollution," of these special provisions. At a minimum, the Dewatering and Discharge Plan shall include the following:

- 1) A title sheet and table of contents
- 2) A description of the dewatering and discharge operations detailing the locations, quantity of water, equipment, and discharge point
- 3) The estimated schedule for dewatering and discharge (begin and end dates, intermittent or continuous)
- 4) Discharge alternatives such as dust control or percolation
- 5) Visual monitoring procedures with inspection log

The Contractor shall not discharge storm water or non-storm water that has an odor, discoloration other than sediment, an oily sheen, or foam on the surface and shall notify the Engineer immediately upon discovery.

Full compensation for construction site management including furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in spill prevention and control, material management, waste management, non-storm water management, and dewatering and identifying, sampling, testing, handling, and disposing of hazardous waste, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer, shall be considered as included in the contract prices paid for the various items of work and no separate payment will be made therefor.

**I. TEMPORARY CONCRETE WASHOUT FACILITY**

Temporary concrete washout facilities shall be constructed, maintained, and later removed at the locations shown on the approved Water Pollution Control Program (WPCP) in conformance with "Water Pollution" of these special provisions, and these special provisions.

Temporary concrete washout facilities shall be one of the water pollution control practices for waste management and materials pollution control. The WPCP shall include the use of temporary concrete washout facilities.

**Plastic Liner**

Plastic liners shall be single ply, new polyethylene sheeting, a minimum of 10 mils thick and shall be free of holes, punctures, tears or other defects that compromise the impermeability of the material. Plastic liners shall not have seams or overlapping joints.

**Gravel-filled Bags**

Gravel bag fabric shall be nonwoven polypropylene geotextile (or comparable polymer) and shall conform to the following requirements:

Specification	Requirements
Weight per unit area, ounces per square yard, min. ASTM Designation: D 5261	8.0
Grab tensile strength (one inch grip), kilonewtons, min. ASTM Designation: D 4632*	205
Ultraviolet stability, percent tensile strength retained after 500 hours, ASTM Designation: D 4355, xenon arc lamp method	70

\* or appropriate test method for specific polymer

Gravel bags shall be between 24 inches and 32 inches in length, and between 16 inches and 20 inches in width.

Yarn used for binding gravel bags shall be as recommended by the manufacturer or bag supplier and shall be of a contrasting color.

Gravel shall be between 3/8 inch and 3/4 inch in diameter, and shall be clean and free from clay balls, organic matter, and other deleterious materials.

The opening of gravel-filled bags shall be secured to prevent gravel from escaping. Gravel-filled bags shall be between 30 pounds and 50 pounds in weight.

### **Straw Bales**

Straw bales shall be a minimum of 14 inches in width, 18 inches in height, 36 inches in length and shall have a minimum weight of 50 pounds. The straw bale shall be composed entirely of vegetative matter, except for binding material.

Straw bales shall be bound by either wire, nylon or polypropylene string. Jute or cotton binding shall not be used. Baling wire shall be a minimum of 16 gage in diameter. Nylon or polypropylene string shall be approximately 0.08-inch in diameter with 80 pounds of breaking strength.

### **Stakes**

Stakes shall be wood or metal. 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 or other defects which would render them unfit for the purpose intended. Wood stakes shall be a minimum 2" x 2" in size. Metal stakes may be used as an alternative, and shall be a minimum of 0.5-inch in diameter. Stakes shall be a minimum of 4 feet in length. The tops of the metal stakes shall be bent at a 90-degree angle or capped with an orange or red plastic safety cap that fits snugly to the metal stake. The Contractor shall submit a sample of the metal stake and plastic cap, if used, for the Engineer's approval before installation.

### **Staples**

Staples shall be as shown on the plans for erosion control. An alternative attachment device such as geotextile pins or plastic pegs may be used instead of staples. The Contractor shall submit a sample of the alternative attachment device for the Engineer's approval before installation.

### **Signs**

Plywood shall be freshly painted for each installation with not less than 2 applications of flat white paint. Sign letters shall be stenciled with commercial quality exterior black paint. Testing of paint will not be required.

### **INSTALLATION**

Temporary concrete washout facilities shall be as follows:

- 1) Temporary concrete washout facilities shall be installed before beginning placement of concrete and located a minimum of 50 feet from storm drain inlets, open drainage facilities, and water courses unless determined infeasible by the Engineer. Temporary concrete washout facilities shall be located away from construction traffic or access areas at a location determined by the Contractor and approved by the Engineer.
- 2) A sign shall be installed adjacent to each washout facility at a location determined by the Contractor and approved by the Engineer.
- 3) Temporary concrete washout facilities shall be constructed in sufficient quantity and size to contain liquid and concrete waste generated by washout operations for concrete wastes.

These facilities shall be constructed to contain liquid and concrete waste without seepage, spills, or overflow.

- 4) Berms for below grade temporary concrete washout facilities shall be constructed from compacted native material. Gravel may be used in conjunction with compacted native material.
- 5) A plastic liner shall be installed in below grade temporary concrete washout facilities.

Details for an alternative temporary concrete washout facility shall be submitted to the Engineer for approval at least 7 days before installation.

When temporary concrete washout facilities are no longer required for the work, as determined by the Engineer, the hardened concrete and liquid residue shall be removed and disposed of.

Ground disturbance, including holes and depressions, caused by the installation and removal of the temporary concrete washout facilities shall be backfilled and repaired to original condition.

#### MAINTENANCE

Temporary concrete washout facilities shall be maintained to provide adequate holding capacity with a minimum freeboard of 12 inches. Maintaining temporary concrete washout facilities shall include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials shall be removed and disposed of. Holes, rips, and voids in the plastic liner shall be patched and repaired by taping or the plastic liner shall be replaced. The plastic liner shall be replaced when patches or repairs compromise the impermeability of the material as determined by the Engineer.

Gravel bags shall be replaced when the bag material is ruptured or when the yarn has failed, allowing the bag contents to spill out.

Temporary concrete washout facilities shall be repaired or replaced on the same day the damage occurs. Damage to temporary concrete washout facilities resulting from the Contractor's vehicles, equipment, or operations shall be repaired at the Contractor's expense.

#### PAYMENT

Full compensation for Temporary Concrete Washout Facility shall be considered as included in the contract prices paid for the various items of work and no separate payment will be made therefor.

Temporary concrete washout facility shall include furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in constructing a temporary concrete washout facility, complete in place, including excavation and backfill, maintenance, and removal, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

#### J. CONSTRUCTION AREA SIGNS.

Construction area signs shall be furnished, installed, maintained, and removed when no longer required in accordance with the provisions of Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications and these special provisions.

Full compensation for furnishing, installing, maintaining and removing construction area signs shall be considered as included in the contract price paid for the various contract items of work and no separate payment will be made therefor.



**K. SIGNING.**

Permanent roadside signs shall be removed and salvaged by the Contractor. The Contractor shall replace any permanent signs damaged as a result of the Contractor's activities, unless otherwise shown on the plans.

Full compensation for any additional costs resulting in the compliance with this section shall be considered as included in the prices paid for the various contract items of work and no separate payment will be made therefor.

**L. MAINTAINING TRAFFIC.**

Lane closures shall conform to the provisions of these special provisions.

Personal vehicles of the Contractor's employees shall not be parked on the traveled way at any time, including any section closed to public traffic.

The Contractor shall notify local authorities of the intended date when work is to commence at least one week before work is begun. The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make arrangements relative to keeping the working area clear of parked vehicles.

The provisions in this section may be modified or altered if, in the opinion of the Engineer, public traffic will be better served and work expedited. Said modifications or alterations shall not be adopted until approved in writing by the Engineer.

The Contractor shall be responsible for installing and maintaining adequate temporary traffic lane markers, pavement markings and temporary traffic signs to replace existing traffic control devices removed by construction.

The type and location of these temporary traffic control devices shall be as specified by the Contractor and as approved the Engineer.

The cost of furnishing, installing, and maintaining signs, lights, flares, barricades, and other facilities for the sole convenience and direction of public traffic, and the cost of furnishing all flaggers and guards, shall be wholly borne by the Contractor.

**M. FLAGGING COSTS.**

All flagging costs shall be included in the contract prices paid for the various items of work and no separate payment will be made therefor.

**N. EXISTING UTILITIES.**

The existing utilities shown on the accompanying plan set were plotted using information provided by the individual utility. It should be understood that this information does not necessarily represent actual site conditions or show details of exact location, depth or other construction features of each utility. No warranty, either expressed or implied, as to the completeness or accuracy of this information is set forth herein. It is the Contractor's responsibility to verify this information with the affected utilities prior to starting work.

The Contractor shall notify the Engineer and the regional notification center, "Underground Service Alert" at 800-642-2444, and other affected utilities at least 2 working days, but not more than 14 calendar days, prior to performing any excavation or other work close to any underground pipeline, conduit, duct, wire or other structure. The Contractor will be required to work around

existing utilities.

In addition, if it is noted on the plans or in these special provisions that the shutting off of power lines or water facilities may be necessary to allow for the work, it will be the Contractor's responsibility to notify the utility of the required action a minimum of 14 days prior to the work at or around the utility.

Utilities to be contacted include:

- |                                |                     |
|--------------------------------|---------------------|
| • Pacific Gas and Electric     | Tel: (831) 479-3104 |
| • AT&T                         | Tel: (831) 728-5032 |
| • Verizon                      | Tel: (408) 358-6791 |
| • Comcast                      | Tel: (831) 657-6042 |
| • Scotts Valley Water District | Tel: (831) 438-2363 |

The work shall be prosecuted so that minimum damage will be done to underground utilities. In the event that water services are broken or damaged between the meter and the point of service, the Contractor shall immediately, at Contractor's own expense, repair such damage in a manner satisfactory to the Engineer, in order that the water supply will not be interrupted for a period greater than one (1) hour. If such interruption be sustained, it shall be the Contractor's responsibility to notify the occupants of the premises to which said services are connected and make necessary arrangements so that no damage will occur on said premises. Whenever sewer facilities are broken or damaged, the Contractor shall take immediate steps to provide for the continuation of flow and shall make complete repairs as soon as practicable and the full cost thereof shall be borne by the Contractor.

Where existing underground utilities are undercut, particular care shall be exercised in selecting, placing, and compacting the backfill material under and around such utility to assure a firm support.

In accordance with Section 4215 of the Government Code of the State of California, the County shall make provisions to compensate the Contractor for the costs of locating and repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such main and trunk line utility facilities not indicated in the plans and specifications with reasonable accuracy, and for equipment on the project necessarily idled during such work. Compensation will be in accordance with the requirements of "Claims," of these special provisions and the Standard Specifications. In the event the Contractor discovers utilities not identified in the Contract Documents, the Contractor shall immediately notify the Engineer and the utility owner by the most expeditious means available and later confirm in writing.

It is understood and agreed that the failure of the Contractor or its subcontractor to comply fully with these provisions constitutes failure of the Contractor to exercise reasonable care and precludes Contractor's recovery from County for any related costs or damages.

Full compensation for working around existing utilities shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefor.

#### O. OBSTRUCTIONS.

It is anticipated that some or all of the utility and other non-highway facilities both below and above ground will be rearranged during construction operations.

If such utility or other non-highway facilities are not located on the plans in both alignment and elevation, no work shall be performed in the vicinity of said utility or other non-highway facilities until the owner, or its designated representative, has located the facility by potholing, probing, or other means that will locate and identify the facility.

The Contractor shall cooperate with the affected utility companies to coordinate work with the re-routing of utilities.

Any delay to the Contractor's operation as a direct result of utility or other non-highway facilities being rearranged during construction shall be compensated for by an extension of contract working days. The Contractor shall be entitled to no other compensation for any such delay.

**P. DUST CONTROL.**

The Contractor shall control the dust resulting from the project regardless of whether it is the result of the Contractor's operations or caused by public traffic only.

Full compensation for Dust Control shall be considered as included in the prices paid for the various contract items of work and no separate payment will be made therefor.

**Q. WATERING.**

If the Contractor uses non-potable water on the project, the sources and discharge of non-potable water shall meet the California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. The Contractor shall obtain either a wastewater discharge permit or a waiver from the Regional Water Quality Control Board. Copies of permits or waivers from the Regional Water Quality Control Board shall be delivered to the Engineer before using non-potable water on the project.

Non-potable water, if used, shall not be conveyed in tanks or pipes that will be used to convey potable water. There shall be no connection between non-potable water supplies and potable water supplies. Non-potable water supply, tanks, pipes and any other conveyances of non-potable water shall be labeled:

**NON-POTABLE WATER  
DO NOT DRINK**

Full compensation for developing water supply and applying water, including water used for dust control, shall be considered as included in the prices paid for the various contract items of work and no separate payment will be made therefor.

**R. PRESERVATION OF PROPERTY.**

Existing facilities, trees, shrubs and other plants, that are not to be removed as shown on the plans or specified in these special provisions, and are injured or damaged by reason of the Contractor's operations, shall be replaced by the Contractor. Damaged or injured plants shall be removed and disposed of outside the roadway right of way.

Replacement planting of injured or damaged trees, shrubs, and other plants shall be completed prior to the start of the plant establishment period or punch list activity.

Replacement planting of injured or damaged trees, shrubs, and other plants shall be completed not less than 20 working days prior to acceptance of the Contract. Replacement plants shall be watered

as necessary to maintain the plants in a healthy condition.

Full compensation for this section and/or any additional costs occasioned by compliance with this section shall be considered as included in the contract prices paid for the various items of work involved and no separate payment will be made therefor.

S. CONSTRUCTION STAGING AREAS.

The Contractor shall make arrangements for a construction staging area and shall provide the Engineer with written prior notice of those arrangements. The Contractor is strongly cautioned that any such staging area must be in conformance with all City land use and zoning regulations.

Full compensation for obtaining and utilizing a construction staging area shall be considered as included in the contract prices paid for the various items of work involved, and no separate payment will be made therefor.

T. PRESERVATION OF MONUMENTS.

The Contractor's attention is directed to Chapter 9.70 of the Santa Cruz County Code Section 9.70.550 - Survey Monuments, Figure ST-11 of the County Design Criteria, and these special provisions. The Code is available for inspection or copying at the Clerk of the Board of Supervisors, Room 500, or the Public Works Department, Room 410 at 701 Ocean Street in Santa Cruz. It is also available online at:

<http://www.codepublishing.com/ca/santacruzcounty/>

Santa Cruz County Code Volume I Division II, Roads Chapter 9.70 Section 9.70.550 - Survey Monuments

“Any monument of granite, concrete, iron or other lasting material, set for the purpose of locating or preserving the lines or elevation of any county-maintained road or right-of-way, property subdivision, or a precise survey point or reference point, shall not be removed or disturbed without first obtaining permission from the director. Replacement of removed or disturbed monuments shall be at the expense of the permittee.”

The Contractor shall be responsible for protecting all of the property monuments.

Full compensation for complying with the Santa Cruz County Code, Volume I Division II, Roads Chapter 9.70 Section 9.70.550 - Survey Monuments, including replacing and filing the appropriate records shall be considered as included in the prices paid for the various contract items of work involved that disturb, move damage, or destroy the property monuments and no additional compensation will be allowed therefor.

U. REPLACE PAVEMENT MARKERS.

The quantity of reflective and non-reflective pavement markers will be measured as units determined from actual count in place. Attention is directed to reflective pavement markers placed at the center of the roadways opposite of existing fire hydrants.

The cost of each pavement marker shall be considered as included in the contract price paid for other items, and no separate payment will be made for replacing pavement markers (reflective) and pavement markers (non-reflective and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and placing pavement markers. complete in place, including adhesives, and establishing alignment for

pavement markers, as shown on the plans, as specified in the Standard Specifications and the Special Provisions, and as directed by the Engineer.

V. CRACK SEAL.

This work shall consist of removal of loose matter from cracks with brooms and compressed air and sealing the crack with rubber or other elastomeric modified asphalt, ASTM D1190, D3405, or AASHTO M-173. The sealant shall be applied from the bottom of the crack up and the finished seal sprinkled with dry sand to prevent pick-up by traffic.

Pavement cracks to be sealed shall be a minimum of ¼” wide. The contractor shall be responsible for reviewing the areas designated to be crack-sealed to determine the quantity of crack sealing required.

Full compensation for Crack Seal shall be considered as included in the contract price paid for Type II Slurry, and no separate payment will be made therefor.

PART 2 MEASUREMENT AND PAYMENT

2.1 INCREASED AND DECREASED QUANTITIES.

The City reserves the right to increase, decrease or delete the quantities of items as follows:

1	MILLING CCPR
2	FULL DEPTH RECLAMATION GRADING SUPPORT
3	FULL DEPTH RECLAMATION @ 5% CEMENT
4	CCPR MANUFACTURE AND INSTALL
5	ASPHALT CONCRETE TYPE B
6	CLASS 2 AGGREGATE BASE ROCK
7	EARTHWORK
8	ROADSIDE SIGNS

Such other items or details not mentioned above that are required by the plans, standard specifications, or these special provisions shall be performed, placed, constructed, or implemented.

2.2 PAY ITEMS

A. MOBILIZATION

Mobilization shall conform to the provisions in Section 11, “Mobilization,” of the Standard Specifications. The Contractor shall submit a progress schedule prior to mobilization. The progress schedule shall comply with Section 8, “Prosecution and Progress,” of the Standard Specifications.

The Contract Lump Sum price paid for Mobilization shall include full compensation for furnishing

all labor, materials, tools, equipment and incidentals, including providing the Progress Schedule, and for doing all the work involved in Mobilization as specified in the standard Specifications and these special provisions, and as directed by the Engineer.

**B. CLEARING AND GRUBBING.**

Clearing and grubbing shall conform CSS Section 17-2 and to these special provisions. Clearing and grubbing shall include all of the work involved in protecting existing vegetation as described in these Special Provisions.

Vegetation shall be cleared and grubbed only within the excavation lines. All existing vegetation outside the areas to be cleared and grubbed shall be protected from injury or damage resulting from the Contractor's operations. Any damage to existing landscaping outside the area to be cleared and grubbed shall be replaced in kind per the Preservation of Property section of the Special Provisions. Any damage to existing irrigation systems shall be repaired in kind with new replacement parts, except as otherwise shown on the plans.

Miscellaneous items of work not specifically included in other contract bid items shall be considered as included in the lump sum price bid for "Clearing and Grubbing." Such items include, but are not limited to, minor demolitions, removals, or abandonments as delineated on the plans or as directed by the Engineer in the field.

This item includes but is not limited to the removal of curbs and median islands, removal of existing striping, removal of vegetation, trees, tree stumps, and all other obstructions within the project limits; relocation of signs; removal, relocation or replacement of existing fences; installing and maintaining temporary construction fences; replacing/repairing in kind existing vegetation and sprinkler systems disturbed by the project, and protection of existing vegetation which is to remain.

The contract lump sum price paid for Clearing and Grubbing shall include full compensation for furnishing all labor, material, tools, equipment and incidentals, and for doing all the work involved in clearing and grubbing as shown on the plans and as directed by the Engineer, including all of the work involved in protecting existing vegetation, including removal of all vegetation necessary to complete the contract and disposal of all excess material, and no additional compensation will be allowed therefor.

**C. COLD CENTRAL PLANT RECYCLING MIX DESIGN**

At least 14 days prior to beginning the recycling operation, the contractor shall submit a cold central plant recycling asphalt concrete mix design to the Engineer. The mix design is for informational purposes only. The mix design shall be performed by an AASHTO accredited or Caltrans approved laboratory. The Contractor shall determine the rate of emulsified recycling agent and additive to be added to the old milled reclaimed asphalt pavement (kilograms of emulsified recycling agent per 100 kg of dry millings) as part of the mix design for the recycled pavement mixture. Reclaimed asphalt pavement used in the mix design shall be obtained directly from the project site either by coring or milling, as approved by the Engineer. Based on the characteristics of the reclaimed asphalt pavement taken from the project site, more than one mix design may be required.

The mix design for the recycled pavement mixture shall conform to the requirements in Lab Procedure 8, "Method of Test for Determining the Percent of Emulsified Recycling Agent to Use for Cold Recycling of Asphalt Concrete," available on the internet at: [www.dot.ca.gov/hq/esc/Translab/ormt/pdf/LP\\_8.pdf](http://www.dot.ca.gov/hq/esc/Translab/ormt/pdf/LP_8.pdf)

The recycled pavement mixture shall conform to the following quality requirements throughout cold central plant recycling operations:

**Cold In-Place Recycling Mix Requirements**

Design Parameters	Requirement
Gradation of Reclaimed Asphalt Pavement (RAP): CT202	Passing 25mm (1")
Asphalt Content of RAP: CT 362 or CT 379 or ASTM D 2172 Method B	Report
Bulk Specific Gravity of Compacted Samples(1)(2): CT 308 Method C	Report
Maximum Theoretical Specific Gravity(2): CT 309 (including provisions of Section J)	Report
Air Voids of Compacted and Cured Specimen(2): AASHTO T 245 40°C (104°F)	Report
Marshall Retained Stability, AASHTO T 245, 40°C (104°F) Based on Moisture Conditioning on Cured Specimen(2)(3)	5,560 N (1,250 lb.) Minimum
Ratio of Emulsion Residue to Cement (mass:mass)	3:1 Minimum
Raveling Test, Section 9 of Lab Procedure 8, 10°C (50°F)	Report

- Note:
1. 100 mm diameter mold compaction based on either 75 blow Marshall each side or gyratory compactor at 30 gyrations
  2. Measurement on specimens after 60°C (140°F) curing to constant weight for no less than 16 hours and no more than 48 hours
  3. Vacuum saturation of 55 to 75 percent, water bath at 25°C (77°F) for 23 hours, last 30 to 40 minutes in 40°C (104°F) water bath

During the mix design, the Contractor shall determine the target values for penetration at 25°C and viscosity at 60°C of the emulsified recycling agent to be used in production of the recycled pavement mixture.

The mix design report shall include gradation of millings; recommended water content range as a percentage of dry millings; optimum emulsion content as a percentage of dry millings; amount of additive as a percentage of dry millings; and corresponding density, air void level, absorbed water, Marshall stability, retained stability, and raveling at recommended moisture and emulsion contents. For the emulsified recycling agent and any additives, include the designation, company name, location, residue content, and certificates of compliance.

**Contractor Responsibility**

The contractor is responsible for the final product. Adjustment may be made in the field to the actual application rate of emulsified recycling agent or additives as needed, as provided by these special provisions, based on the opinion of the contractor. Any changes made by the Contractor shall be documented in conformance with these special provisions.

**PAYMENT**

The contract price paid per lump sum for cold central plant recycling mix design shall include full compensation for furnishing all labor for performing all testing and analysis as specified in these special provisions, and as directed by the Engineer.

**D. COLD CENTRAL PLANT MILLING AND RECYCLING**

This work consists milling the existing asphalt concrete pavement to the length, depth, and width as shown on the plans; transporting the millings to the Central Plant, mixing the cold milled material with emulsified recycling agent and other additives where required; transporting the materials back to the job site, then spreading and compacting the recycled pavement mixture to the lines and grades as specified in these provisions and as shown on the plans. The Contractor shall be responsible for locating and securing property for Cold Central Plant Recycling operations which meets the project's processing requirements. It shall be the responsibility of the Contractor to dispose of excess millings that do not get recycled.

The Contractor shall be responsible for all damage to cold mill planing machine caused by hitting any hidden objects during the planing operation. In addition, the Contractor shall be responsible for the cost of repairing any facility that is damaged by the cold mill-planing machine.

#### MEASUREMENT

CCP Milling and Recycling shall be measured by the square foot of pavement milled as shown on the plans. CCPR Manufacture and Install shall be measured by the ton of material. The amount to be paid for will be calculated on the basis of accepted work completed to the dimensions shown on the plans, adjusted by the amount of any change ordered by the Engineer. Cold central plant recycling performed outside those dimensions will not be measured or paid for. Test strips conforming to the requirements of these special provisions will be included in the quantity to be paid for.

#### PAYMENT

The contract price paid per square foot for "CCP Milling and Recycling" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals (including preparation of the existing roadway surface and referencing the profile and cross slope of existing pavement, local stockpiling of CCPR materials, minor grading, and disposal of excess millings).

The contract price paid per ton "CCPR Manufacture and Install" shall include full compensation for furnishing all labor, materials (including, water, emulsified recycling agent, additives, emulsion for flush coat, and sand for sand blotting), tools, equipment, and incidentals; for doing all the work involved in cold central plant recycling, for securing CCPR Yard that meets the project's processing requirements, for mixing, blending, placing, and compacting the recycled pavement mixture; for reworking all material in overlapping adjacent cuts; for protection and maintenance of the recycled layer; for performing all testing (gradation, and relative compaction tests); for re-establishing the profile and cross slope grade for the finished surface of the recycled layer; for calibrating equipment; for obtaining measurements and recording results of all tests; and for furnishing, placing, maintaining, and removing signs and temporary supports or barricades for the signs, as shown on the plans, as specified in these special provisions, and as directed by the Engineer.

#### E. FULL DEPTH RECLAMATION

Full Depth Reclamation shall conform to the provisions in CSS Section 30-4, Specification Section 32 11 23.1 and these provisions. Full Depth Reclamation (FDR) consists of constructing a reclaimed pavement base using FDR—cement. Constructing an FDR—cement base includes:

- Pulverizing existing asphalt concrete pavement and underlying materials
- Mixing with water, cement, and if specified, supplementary aggregate
- Grading and compacting the mixture
- Applying asphaltic emulsion



Attention is directed to the Plans for areas identified as "Lane Widening through Full Depth Reclamation". The existing soil shall be mixed into the FDR or removed and replaced with supplemental aggregate as determined by the Contractor's mix design testing. No separate payment for supplemental aggregate shall be paid for in Lane Widening through Full Depth Reclamation areas.

#### PAYMENT

Full Depth Reclamation shall be used to widen the roadway as shown on the plans. Unsuitable material removal and/or additional aggregate to meet mixture requirements shall be included in the cost for full depth reclamation.

"Full Depth Reclamation" is measured and paid for by the square foot based on the theoretical FDR-C area and includes all labor, materials, tools, equipment, and testing related to the FDR-C operation, preparation of the existing roadway, and for re-establishing the profile and cross slope grade for the finished sub-surface of the reclaimed layer;. The roadbed dimensions to be reclaimed are shown on the typical sections and layout plans.

Cement is not included in the item for FDR. A separate pay item "Cement For Full Depth Reclamation (@5% Cement)" shall be measured and paid for by square foot. The Contractors will bid on a 5% cement content by dry unit weight. After award, if the submitted mix design indicates a different cement content, the cost of the cement material will be deducted or added to the payment.

If an increase or decrease in the specified cement content is ordered, payment for the increase or decrease in cement is the cost of cement per ton, FOB from the cement mill, including sales tax plus the freight cost per ton for delivery from the mill to the job site. If any cash or trade discount is offered or available, regardless of whether it is taken, that discount is deducted.

Maintain records that allow a clear determination of the cement costs associated with an ordered increase or decrease. Submit evidence of the cost of cement used for the increase or decrease.

If your records show an excessive cost for the increase or decrease of cement or you furnish inadequate evidence for the cost, the Engineer determines the cost to be the lowest wholesale price the cement was available for in the quantities delivered to the point of production, less any available discounts.

The quantity of cement subject to an increase or decrease in payment is the difference between the specified theoretical quantity of cement and the quantity of cement ordered.

#### F. ASPHALT CONCRETE TYPE B.

Asphalt concrete shall be Type B and shall conform to the provisions of Section 39, "Asphalt Concrete," of the Standard Specifications and these special provisions. Asphalt concrete shall be produced from commercial quality asphalt and aggregates.

The asphalt concrete shall conform to the following requirements:

1. Asphalt concrete shall be produced at a central mixing plant.
2. Aggregate shall conform to the ½ inch maximum, medium grading specified in Section 39-2.02, "Aggregate," of the Standard Specifications.
3. Paving asphalt shall be viscosity grade PG 64-10 conforming to the provisions of Section 92, "Asphalts," of the Standard Specifications.

4. The amount of asphalt to be mixed with the aggregate shall be between 4 percent and 7 percent by weight of the dry aggregate, as determined by the Engineer.
5. Spreading and compacting shall be performed by methods that will produce an asphalt concrete surfacing of uniform smoothness, texture, and density.

Payment for asphalt concrete Type B shall be limited to permanent placement quantities only. Payment for asphalt concrete Type B used for temporary road surfacing or temporary trench restoration shall be considered as included in the various items of work for which the temporary surfacing is required, and no separate payment will be made therefor.

The contract unit price paid per ton for Asphalt Concrete Type B shall include full compensation for furnishing all labor, material, tools, equipment and incidentals, and for doing all the work involved in constructing asphalt concrete paving complete in place as shown on the plans and as directed by the Engineer, including leveling coarse, spreading, compacting, prime coat and sand cover, and sawcutting existing asphalt concrete paving as necessary, and no additional compensation will be allowed therefor.

**G. AGGREGATE BASE CLASS 2.**

Aggregate base shall be Class 2 and shall conform to the provisions of Section 26, "Aggregate Bases," of the Standard Specifications and these special provisions.

At the option of the Contractor the grading for either the 1-1/2 inch maximum or 3/4 inch maximum aggregate may be used, except that once a grading is selected it shall not be changed without written approval by the Engineer.

Payment for aggregate base shall be limited to permanent placement quantities only. Payment for aggregate base used for temporary road surfacing or temporary trench restoration shall be considered as included in the various items of work for which the temporary surfacing is required, and no separate payment will be made therefor.

The contract unit price paid per ton for Aggregate Base Class 2 shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals and for doing all the work involved in placing and compacting aggregate base Class 2 complete in place as shown on the plans and as directed by the Engineer, and no additional compensation will be allowed therefor.

**H. EARTHWORK**

Earthwork activities shall include grading adjacent to the roadway and compaction activities under new pavement sections. Unless the material resulting from roadway excavation is hazardous, construct embankments with it. If the quantity of excavated material is not sufficient to construct embankments, obtain the material under CSS Section 19-7.

Excavate and dispose of unsuitable material encountered below the natural ground surface in embankment areas or below the grading plane in excavation areas as ordered.

Notify the Engineer before removing the unsuitable material if:

1. Removal is not otherwise described
2. You request payment for removal as change order work

Backfill the space resulting from excavating unsuitable material with material suitable for the planned use. Place and compact suitable material under CSS section 19-5.

Immediately before placing subsequent layers of material, prepare the grading plane such that the

grading plane:

1. Does not vary more than 0.05 foot above or below the grade established by the Engineer where HMA is to be placed.
2. Does not extend above the grade established by the Engineer where concrete base or pavement is to be placed.
3. Beneath structural approach slabs or the thickened portion of sleeper slabs do not extend above the grade established by the Engineer.
4. At any point is within 0.05 foot above the grade established by the Engineer if the material to be placed on the grading plane is paid by the cubic yard.
5. At any point is within 0.10 foot above the grade established by the Engineer if subbase or base material to be placed on the grading plane is paid by the ton.

Remove and dispose of a buried man-made object encountered in an excavation as part of the excavation work.

Notify the Engineer before removing the buried man-made object if:

1. Removal of the object is not otherwise described
2. Object could not have been determined by visual inspection
3. You request payment for removal of the object as change order work

Earthwork consists of all excavation involved in the construction of new asphalt excluding any excavation paid for as a separate bid item.

Roadway excavation includes:

1. Excavating and stockpiling the selected material
2. Removing the stockpiled material and placing it in its final position
3. Removing surcharge material

Construct slopes to the lines and grades established by the Engineer. Slope tolerances are measured perpendicular to the planned slope. Any point on the completed excavation slope must be within 0.5 foot of the planned slope, unless the excavation is in rock, in which case, any point on the completed slope must be within 2 feet of the planned slope.

Slopes or portions of slopes must not encroach on the roadbed. Round the tops of excavation slopes and ends of excavations. Any point on the completed embankment slope must be within 0.5 foot of the planned slope for slopes within 4 feet of the shoulder grade. Slopes below 4 feet must be within 1 foot of the planned slope.

If an embankment is constructed of large rock and the size of rocks make it impracticable to construct slopes within 1 foot, the Engineer may authorize you to construct slopes more than 4 feet below shoulder grade to within 2 feet of the planned slope.

If the slope is to be cultivated or straw is to be incorporated into the surface, remove loose rocks larger than 2-1/2 inches in maximum dimension, roots, and other debris on the surface of the slope before cultivation or incorporation of straw.

Maintain completed slopes. Repair any slope damage caused by erosion.

#### PAYMENT

The payment quantity for earthwork is the volume of placed material, including volume of material involved in:

1. Embankment construction

2. Earthwork activities under new asphalt pavement sections.

The volume of material for earthwork is determined from the average end areas and the distances between them.

If changed conditions or nature of a particular operation make determining the quantities of earthwork based on average end areas impractical, the payment quantity is the volume determined using a method best suited to obtain an accurate quantity.

If the quantities of earthwork are determined from average end areas and centerline distances, a correction for curvature is not applied to quantities within the roadway prism. In determining the quantity of material outside the original roadway prism, where the roadway centerline is used as a base, a correction is made for curvature if the centerline radius is 1,000 feet or less.

I. CONCRETE CURB

Concrete curb shall conform to the provisions of these special provisions, and Figure ST-4 of the City of Scotts Valley standard details.

Portland cement concrete for construction of Concrete Curb shall be produced from commercial quality aggregates and cement and shall be Class 3, containing not less than 500 lbs of cement per cubic yard.

Where new median curb adjoins existing, dowel to existing curb with two #3 dowels 12 inch long.

The contract unit price paid per linear foot for Concrete Curb shall include full compensation for furnishing all labor, material, tools, equipment, and incidentals, and for doing all the work involved in constructing curb and gutter complete in place as shown on the plans and as directed by the Engineer, including excavation and backfill, forms, sand cushion, dowels and no additional compensation will be allowed therefor.

J. SLURRY SEAL (TYPE II)

Slurry Seal shall be applied in the appropriate portions of the entire project area. The work performed shall conform to the provisions of Section 37-2, "Slurry Seals," and Section 94, "Asphaltic Emulsions," of the Standard Specifications.

Asphaltic Emulsion for Slurry Seal shall be cationic, quick setting type CQS-1h and shall be mixed with a 2% latex additive.

The Contractor shall be required to submit a slurry seal mix design, which must be approved by the Engineer prior to construction. Immediately before slurry seal operations commence the Contractor shall protect all raised pavement markers (reflective type), remove all oil stains and thoroughly sweep the streets with a power broom to remove all dirt, debris, or other loose material.

All manhole and utility covers shall be protected by covering or bagging the covers or by a suitable means approved by the Engineer. All reflective and non-reflective pavement markers removed for slurry seal shall be replaced in kind.

No slurry sealing shall commence until the Engineer confirms that the street has been properly prepared for the slurry seal. Following the slurry seal operation all manholes, valves and utility covers shall be uncovered and cleaned as directed by the Engineer.

The Contractor shall apply crack seal prior to the placement of Slurry Seal.

Where no reflective pavement marking exists the Contractor shall place temporary pavement marking for traffic control. This temporary marking shall be along the centerline and fog lines at a maximum distance of 24 feet apart. The Contractor shall also mark all stop bars and legends. The color of the markers shall be consistent with the line or legend being delineated.

The contract unit price paid per ton for Slurry Seal (Type 2) shall include full compensation for furnishing all tools, labor, material, equipment, incidentals and for doing all the work involved in applying the slurry seal and crack seal as specified in the Standard Specifications and these special provisions, and as directed by the Engineer and no additional compensation will be allowed therefor.

#### K. PAVEMENT MARKINGS

Thermoplastic traffic stripes (traffic lane lines) and pavement markings shall conform to the provisions in Sections 84-1, "General," and 84-2, "Thermoplastic Traffic Stripes and Pavement Markings," of the Standard Specifications and these special provisions.

Before thermoplastic traffic stripes and pavement markings are applied, the Contractor shall submit information to the Engineer relating to the marking product's manufacturer, specifications, shelf life, expiration date and method of application.

All thermoplastic traffic stripes and pavement marking shall be applied with the extrusion method only, not sprayed. All pavements to receive thermoplastic shall be mechanically cleaned with a wire brush to remove all dirt and contaminants immediately prior to the placement of any thermoplastic striping or marking.

Existing traffic stripes and pavement markings in areas where new paving will not occur, and which conflict with the new striping shown on the plans, shall be removed by grinding. Note 4 on Standard Plan A-24D shall not apply.

Thermoplastic traffic stripes will be measured by the linear foot along the line of the traffic stripes, without deductions for gaps in broken traffic stripes. A double traffic stripe, consisting of two 100 mm wide stripes, will be measured as 2 traffic stripes.

Thermoplastic pavement markings will be measured by the square foot for the actual area covered as shown in the Standard Plans.

The contract unit prices paid per foot for Thermoplastic Traffic Stripes in the widths designated, and per square foot for Thermoplastic Pavement Markings shall include full compensation for furnishing all labor, material, tools, equipment and incidentals, and for doing all the work involved in applying thermoplastic traffic stripes and thermoplastic pavement markings, complete in place, as specified in these special provisions, and as directed by the Engineer, including removal of existing striping and markings by grinding as necessary, and no additional compensation will be allowed therefore.

#### L. REDWOOD HEADER BOARD

Redwood Header Board shall conform to the provisions of Sections 20-2.12, "Lumber," and 20-4.04, "Header Boards," of the Standard Specifications and these special provisions.

All lumber for redwood header boards shall be construction heart, rough surface, untreated, and

shall have the dimensions shown on the plans.

The contract unit price paid per meter for Redwood Header Board shall include full compensation for furnishing all labor, material, tools, equipment and incidentals, and for doing all the work of constructing the header boards complete in place as shown on the plans and as directed by the Engineer, including excavation and backfill, and disposal of excess excavated material, and no additional compensation will be allowed therefor.

**M. ROADSIDE SIGNS**

Roadside signs shall be installed at the locations shown on the plans or where directed by the Engineer and in conformance with the provisions in Section 56-2, "Roadside Signs," of the Standard Specifications and these Special Provisions.

Roadside Signs shall be mounted on metal posts per Section 56-2.02A, "Metal Posts," of the Standard Specifications and these Special Provisions.

Sign panels shall be as fabricated by Safeway Sign Co., 1314 West 134th Street, Gardena, Ca., (800) 637-7233 or equivalent.

The contract price paid per new Roadside Sign shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in Installing Roadside Signs, complete in place, as shown on the plans, as specified in the Standard Specifications and these Special Provisions and as directed by the Engineer.

Full Compensation for replacing the mounting bracket of one of the existing bridge mounted sign panel, as shown on the plans and as directed by the Engineer shall be considered as included in the contract price paid for Install Sign Panel on Existing Frame and no separate payment will be allowed therefor.

**N. BOLLARDS**

Bollards shall be installed at the locations shown on the plans or where directed by the Engineer and in conformance with the details shown on the plans and these special provisions.

The contract price paid per new Bollard shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in installing Bollards, complete in place, as shown on the plans, as specified in these Special Provisions and as directed by the Engineer.

**O. CONCRETE RESURFACING**

The contract lump sum price paid for Concrete Resurfacing shall include compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in concrete resurfacing (including surface preparation, mixing, application, curing, and cleaning) complete in place, as shown on the plans, as specified in Section 05 53 00 Concrete Resurfacing and these Special Provisions and as directed by the Engineer.

**P. EROSION CONTROL**

Erosion Control shall conform to these special provisions. The work shall consist of applying straw, seed, and fertilizer to excavation and embankment slopes, and any area disturbed during construction of the project.

Straw shall be spread and incorporated into the soil at the total rate of approximately 2.2 tonne/ha.

After the straw is incorporated into the soil, seed shall be applied at the rate of 44 kg/ha (slope measurement). Seed Treated with mercury compounds shall not be used. Seed shall be mixed on the project site in the presence of the Engineer and shall consist of the following:

Botanical Name (Common Name)	Application Rate
Bromus Mollis ("Blando Brome")	2.0 kg/ha
Trifolium Hirtum ("Rose Clover")	13.0 kg/ha
Festuca Megalura ("Zorro" Annual Fescue")	9.0 kg/ha
Eschscholzia Californica ("California Poppy")	1.0 kg/ha

Commercial fertilizer shall be applied at the rate of 560 kg/ha (slope measurement) and shall have the following guaranteed chemical analysis:

<u>Ingredient</u>	<u>Percentage(minimum)</u>
Nitrogen	16
Phosphoric Acid	20
Water Soluble Potash	0

The contract lump sum price for erosion control shall include full compensation for furnishing all labor, material, tools, equipment and incidentals, and for performing all the work of planting and erosion control, as shown on the plans and as directed by the Engineer, including seed, fertilizer, and straw mulch, straw wattles, drain inlet protection, erosion control blankets, silt fence and no additional compensation will be allowed therefor.

SECTION 033000 - CONCRETE SITE WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Provisions for Constructing:

- a. Miscellaneous concrete for use in site work and concrete curbs.

B. Related Sections

- 1. SECTION 31 05 13 – EARTHWORK
- 2. SECTION 31 23 17 – TRENCHING

1.2 REFERENCES

- A. Standards listed below, after their abbreviated designation, apply where the designation is cited in this Section. Refer to the latest edition unless otherwise noted.

B. Local Agency Specifications

1. When applying the cited standards, the following shall be understood.

- a. Terms such as Commission, Department or Agency shall mean the City of Scotts Valley.
- b. Terms such as Director, Executive Officer, or Engineer shall mean the City's Representative.
- c. In case of discrepancies between the cited standards and this Section, this Section governs.
- d. All references to statistical testing are deleted.
- e. All references to measurement and payment are deleted.

2. Standards cited:

- a. State of California, Department of Transportation's (Caltrans) "Standard Specifications", (CSS).

1.3 SUBMITTALS

- A. Product Data: Catalog cuts for each specified or indicated manufactured product.

B. Quality Control Submittals



1. Certificate of compliance with specified industry standards.

C. Samples: 3'x 3'x 4" concrete samples of color and texture for approval.

1.4 SITE CONDITIONS

A. Do not place concrete when base surface temperature is less than 40 degrees Fahrenheit, or surface is frozen.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE AND SUBBASE

A. See SECTION 31 05 13 – EARTHWORK and SECTION 32 11 23 – AGGREGATE BASE

2.2 CONCRETE MATERIALS

A. Concrete mixes by minimum 28-day strength unconfined compressive strength for concrete of at least 2500 psi to be used for walkways, stairways, ramps, utility pads, and utility work such as manholes and thrust blocks.

28 - day <u>Strength</u> 2500 psi	Max. size of <u>Aggregate</u> 1"	Max. <u>Slump</u> 4"
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B. Use only one brand type of cement for each type of concrete finish

2.4 REINFORCEMENT:

A. Deformed steel bars shall conform to CSS Section 52, ASTM A615, Grade 60 or better and shall be of U.S.A. domestic manufacturers.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify grading has brought subgrade to proper elevation.

B. Report any discrepancies in Drawings, conditions at the site, or prior work done by others which would prevent positive drainage or would produce unsatisfactory concrete work.

C. Ensure all underground work and embedded items are in place.

3.2 AGGREGATE BASE

A. Place, spread, moisture condition, and compact in accordance with Section 31 05 13.

3.3 CONCRETE, GENERAL

CONCRETE SITE WORK

- A. Notify the City's Representative at least 48 hours prior to placing concrete.
- B. Place Concrete in accordance with this section.
- C. All concrete work shall be true to line and grade as indicated on the drawings. Follow the intent of drainage patterns indicated; any surface which does not drain properly will be rejected.
- D. Finished paving surfaces shall not vary more than 1/8" from a 10' metal straightedge, except at grade changes. No "birdbaths" or other surface irregularities will be permitted. Correct irregularities to the satisfaction of the City's Representative at no additional cost to the City.
- E. Tooled weakened plane joints shall be set at 20 foot intervals with a depth of 1/3 the slab thickness.
- F. Concrete walkways with gradients less than 5% (1:20) shall have a light broom finish.
- G. Concrete ramps with gradients between 5% (1:20) and 8.33% (1:12) shall have a medium broom finish.

#### 3.4 PROTECTION

- A. Conform to applicable requirements of CSS Section 90-8.
- B. Protect all concrete work against injury and defacement during subsequent construction operations until Final Acceptance.

#### 3.5 CURING

- A. All concrete shall be allowed to cure a minimum of 7 days prior to any loading.

#### 3.6 FIELD QUALITY CONTROL

- A. The City's Geotechnical Engineer will inspect subgrade and any required bases prior to placement of concrete.
- B. The City's Testing Agency will take samples for testing during the course of the work in accordance with the Contract Documents or as considered necessary.

END OF SECTION 03 30 00

SECTION 03 53 00 – CONCRETE RESURFACING

PART 1 – GENERAL

1.10 SUMMARY

- A. Provide one component, polymer modified, shrinkage compensated, cement based, squeeze applied mortar for repair and resurfacing of existing concrete substrate.

1.20 SUBMITTALS

- A. Product Data: Submit manufacturer's product data and installation for each material and product used. Include manufacturer's Material Safety Data Sheets.

1.30 REFERENCES

- A. ASTM C 109: Compressive Strength of Hydraulic Mortars
- B. ASTM C 157: Length Change of Hardness Hydraulic Cement

1.40 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: The manufacturer shall be a company with at least fifteen years experience in the manufacturer and marketing cementitious dry packaged repair materials.
- B. Installer's Qualifications: The contractor shall be qualified to perform the work specified by reason of experience.

1.50 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.
- B. Store products in a dry area. Protect from direct sunlight.
- C. Handle products in accordance with manufacturer's printed recommendations.

## PART 2 – PRODUCTS

### 2.10 MATERIALS

- A. Polymer modified and shrinkage compensated, hydraulic cement based one component Concrete Resurfacer. Comply with the following:
1. Manufacturer: Concrete Resurfacer as manufactured by the QUIKRETE® Companies, One Securities Centre, 3490 Piedmont Road, NE, Suite 1300, Atlanta, GA 30305; telephone (404) 634-9100 or approved equal.
  2. Performance and Physical Properties at 73 degrees F and 50 percent relative humidity:
    - a. Compressive Strength, ASTM C 109 (Air Cured): 1000 psi (6.9 MPa) @ 24 hours, 3000 psi (20.71 MPa) @ 7 days and 4500 psi (31.0 MPa) @ 28 days
    - b. Length Change, ASTM C 157 Modified: Stored in Water < +0.15%  
Stored in Air < - 0.15%
    - c. Walk on Time: 6 hours
    - d. Drive on Time: 24 hours

## PART 3 – EXECUTION

### 3.10 EXAMINATION

- A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas landscaping from contact due to mixing and handling of materials.

### 3.20 SURFACE PREPARATION:

Comply with manufacturer's printed instructions and the following:

1. Existing concrete must be rigorously cleaned to ensure proper adhesion of Concrete Resurfacer. Pressure wash thoroughly with a 3,500 – psi (24MPa) pressure washer.
2. Level spalled areas, pits or cracks with Concrete Resurfacer in trowelable consistency. Use approximately one part water to 7 parts Concrete Resurfacer by volume. Allow the repairs to harden before resurfacing the entire area.
3. Section off the work into areas no larger than about 100 sq. ft. (9.3 m<sup>2</sup>). Control joints and expansion joints must be maintained. Use weather stripping or duct tape to prevent Concrete Resurfacer from flowing into joints.

### 3.30 MIXING:

Comply with manufacturer's printed instructions and the following:

1. Mix in a five-gallon (19 L) bucket with a ½", (12 mm) drill and paddle mixer. Larger quantities can be mixed using a Mortar Mixer.
2. Add approximately 5.5 pts. (2.6 L) of water per 40-lb (18.1 kg) bag. Add the powder to the water and mix to a lump free pourable consistency. Add water sparingly to reach the desired consistency. Do not exceed 7 pints (3.3 L) of water per 40-lb (18.1 Kg) bag.
3. Concrete Resurfacer has a working time of about 20 minutes at 73°F (23°C). In hotter weather, working time will be reduced.

#### 3.40 APPLICATION:

Comply with manufacturer's printed instructions and the following:

1. Saturate the surface with water then remove any standing water.
2. Pour Resurfacer on to the prepared surface and spread with a long handled squeegee. Use the squeegee to scrub the material into the surface.
3. For a slip resistant professional finish, follow within five minutes with a broom making full strokes across the full distance of the current Resurfacer work area without stopping. If desired a concrete edger can be used around the edges within 20 minutes of pouring.
4. Do not apply if temperatures are below 50°F (10°C) or are expected to go below 40° (4°C) within a 24 hour period. Use cold water in hot weather or hot water in cold weather to achieve desired grout temperature.

#### 3.50 CURING

1. Under normal conditions no special curing is required. Keep temperature above 50°F (10°C) for 24 hours after finishing. During extreme wind and sun conditions, moist cure with a water fog spray twice daily for 24 - 48 hours after application.
2. Protect from rain for at least 6 hours, longer in cool or damp weather. Do not cover unless immediate rain protection is necessary.
3. No sealer is required.

#### 3.60 CLEANING

- A. Remove excess material before material cures. If material has cured, remove using mechanical methods that will not damage substrate.

END OF SECTION

SECTION 310513 - EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Clearing, including removal of trees, tree roots, paving, planters, existing improvements and anything necessary to complete the work on or below grade.
2. Scarifying and compacting the subbase below areas to receive new pavement or aggregate base sections according to the plans.
3. Excavating, filling, grading, and compaction for the preparation of subgrade for asphalt pavement for the areas as shown on the plans.
4. Disposal of debris, topsoil and surplus material. Debris and surplus material shall be disposed of off City property at a legal disposal facility.

B. Related Sections:

1. Section 01 71 23 – Field Engineering.
2. Section 01 45 00 – Quality Control.
3. Section 31 23 17 – Trenching.
4. Section 03 30 00 – Concrete Site Work
5. Section 32 12 16 – Flexible Pavement.

1.2 REFERENCES

A. Standards listed below, with their designation in parenthesis, apply where designation is cited in this Section. Where the applicable year of adoption or revision is not listed below, the latest edition applies.

B. American Society for Testing and Materials:

1. "Test Method for Moisture of Soils and Aggregate Using Nuclear Gage" (ASTM D3017).
2. "Test Method for Density of Soil in Place by Nuclear Method" (ASTM D2922).
3. "Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils" (ASTM D4318).

C. State of California, Department of Transportation's "Standard Specifications", (CSS) July 1999, English Units. When applying the cited standards, the following should be understood.

1. Terms such as Commission, Department or Agency shall mean the City.

2. Terms such as Director, Executive Officer, or Engineer shall mean the City's Representative.
3. In case of discrepancies between the cited standards and this Section, this Section governs.

### 1.3 DEFINITIONS

- A. Fill: All soil and aggregate materials placed to raise grade of site and/or roadways or to backfill excavations.
- B. Relative Compaction: Ratio (expressed as a percentage) of the field dry density to the maximum dry density of a representative sample of the same material determined by ASTM D1557.
- C. Field Density: In-place compacted dry density as determined in accordance with ASTM D2922 or ASTM D1556 at the discretion of the City's Geotechnical Engineer.
- D. Stockpile Area: Off-site construction staging area designated for temporary stockpiling of native and/or imported material; location and limits as approved by the City's Representative.
- E. Paved Area: Areas outside of building envelope to be covered by concrete or asphalt.
- F. Unstable or "Pumping" Surface: Compacted soil or aggregate which, in the opinion of the City's Geotechnical Engineer, shows unacceptable deflection either vertically or laterally, under loading of construction equipment.

### 1.4 SUBMITTALS

- A. Submit in accordance with Section 01 33 00 – Submittals.
- B. Samples as requested by the City's Geotechnical Engineer -- Refer to SOURCE QUALITY CONTROL Article of this Section.

### 1.5 PROJECT CONDITIONS

- A. Job Conditions:
  1. Off-site Access: Verify all limitations imposed by public jurisdictions on off-site construction routes.
  2. On-site Access: Use on-site access routes designated by the City's Representative. Maintain and clean these routes during construction. At completion of construction restore routes to original condition at no additional cost to the City.
  3. Unusual Site Conditions: If unusual site conditions not defined by the Contract Documents are encountered notify the City's Representative immediately.
  4. Maintain and restore routes as required and accepted by the City's Representative to provide for pedestrian, bicycle, and vehicular traffic during construction.
- B. Environmental Requirements:

1. Water Control: Construct erosion control measures as required to keep site and adjacent areas free from excess water at all times. Keep excavated areas dry by pumping excess water in manner accepted by the City's Representative. All work shall be in accordance with Section 01 57 23 "Storm Water Pollution Prevention".
  2. Stockpiling: Temporary stockpiling of approved excavated materials within the construction staging area for later use will be permitted only in location and manner accepted by the City's Representative.
  3. Adverse Weather Conditions:
    - a. Do not perform fill compaction during periods when site soil moisture content is substantially in excess of moisture content required for optimum compaction.
    - b. Prevent erosion of freshly graded areas during construction and until such time structures are completed and backfilled. Keep sediments from entering drain inlets at all times during construction.
    - c. After interruption by adverse weather conditions, re-establish compaction specified in last layer before resuming work.
- C. Sequencing:
1. Provide schedule of the work before commencing and otherwise notify the City's Geotechnical Engineer and the City's Representative before beginning any earthwork operation.
  2. Sequence earthwork operations and related work including, but not necessarily limited to, demolition, shoring, etc. so as to maintain safe working conditions and preserve existing work which is to remain.
  3. Do not place fill or backfill until forms, rubbish and deleterious materials have been removed, waterproofing measures have been installed, and areas have been accepted by the City's Representative.
  4. After grading is completed and the City's Geotechnical Engineer has finished observation of the work, conduct no further excavation or filling except with the City's Representative's acceptance and observation.

## 1.6 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies: State and local code requirements shall apply to all work in this section and to disposal of debris.
- B. Earthwork, including trenching as specified in Section 02324, shall be performed with no less than 48 hours notification and only in presence of, or with acceptance by, the City's Geotechnical Engineer. Any materials placed or improvements constructed in absence of the City's Geotechnical Engineer's or the City's Representative's acceptance to proceed shall be presumed to be defective and, at discretion of the City's Representative, shall be removed and replaced at no additional cost to the City.

## PART 2 - PRODUCTS



## 2.1 MATERIALS

- A. Native Fill Material: Soil or soil-rock mixture selectively obtained from site excavation, subject to acceptance by the City's Representative, to be used only for grade adjustments as approved by the City's Representative and conforming to the following:
1. Predominantly granular, well graded, not showing excessive shrinkage or swelling when subjected to changes in water content.
  2. Free of organic matter, debris, or other deleterious substances.
  3. Thoroughly compactable without presence of excessive voids.
  4. Free of rocks in excess of 2 inches in size.
- B. Imported Fill Material: Soil or soil-rock mixture hauled in from off-site sources, subject to acceptance by the City's Representative, and conforming to the following:
1. Predominantly granular, well graded, not showing excessive shrinkage or swelling when subjected to changes in water content (ASTM D2487-11).
  2. Free of organic matter, debris, or other deleterious substances.
  3. Thoroughly compatible without presence of excess voids.
  4. Plasticity Index between 4 and 15 (ASTM D4318-10).
  5. Have a minimum sand equivalent of 20.
  6. Have a minimum Resistance ("R") Value of 30.
  7. Be free of rocks in excess of 2 inches in size.
- C. Aggregate Subbase: Aggregate mix hauled in from off-site sources, subject to acceptance by the City's Representative, and conforming to the following:
1. Class 1 Aggregate Subbase conforming to Caltrans Standard Specification Section 25.
  2. Have a minimum Resistance ("R") Value of 55.
- D. Aggregate Base: Aggregate mix hauled in from off-site sources, subject to acceptance by the City's Representative, and conforming to the following:
1. Class 2 Aggregate Base conforming to Caltrans Standard Specification Section 26.
  2. Have a minimum Resistance ("R") Value of 78.
- E. Controlled Density Fill (CDF): A fluid, workable mixture of aggregate, cement and water, subject to acceptance by the City's Representative, and conforming to the following:
1. Slurry Cement Backfill conforming to Caltrans Standard Specification Section 19-3.062.

2. Portland Cement shall conform to Caltrans Standard Specification Section 90-2.01.
  3. Aggregate shall be commercial quality concrete sand.
  4. Minimum of 1 to 1.25 sacks of cement per cubic yard of material produced (see UCSC Standard Utility Trench Detail 02.2-00)
- F. Pipe Bedding: Pipe bedding shall consist of clean imported sand, free from clay or organic material with 90 to 100% passing the No. 4 sieve and not more than 5% passing the No. 200 sieve

## 2.2 SOURCE QUALITY CONTROL

- A. Inspection and testing will be performed under provisions of Section 01 45 00 – Quality Control.
- B. Contractor shall deliver samples to the City’s Geotechnical Engineer of all proposed earthwork materials in sufficient quantities for required tests. Samples shall be tagged with source location and shall be delivered at least 15 days in advance of import.
- C. The City’s Geotechnical Engineer will test materials for conformance with requirements specified.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Identify required lines, levels, contours and datum.
- B. Identify and flag locations of known above and below grade utilities.
- C. Maintain and protect existing utilities remaining which pass through work.
- D. Maintain and protect existing improvements intended to remain.
- E. Notify the City’s Representative and City’s Geotechnical Engineer prior to commencing operations requiring inspection or testing in accordance with articles of this Section.
- F. Strip off topsoil for disposal as directed by the City’s Geotechnical Engineer.

### 3.2 GENERAL REQUIREMENTS

- A. Conduct earthwork operations so as to prevent windblown or vehicle tracked dust and dirt from interfering with the City’s normal operations. Assume liability for all claims related to dust and dirt.
- B. Perform Work with equipment, methods and schedule which do not interfere with the City’s adjacent operations.
- C. Modify earthwork equipment, methods, and/or schedule at no additional cost to the City as required to reduce noise and vibration to a level acceptable to the City’s Representative.

- D. Control drainage during progress of work and after completion of project in accordance with UCSC Standards and Specifications.
- E. Discontinue affected work and notify the City's Representative upon discovery of any unknown utility.
- F. Notify the City's Representative upon discovery of unknown wells, vaults or otherwise enclosed spaces wherever they occur below new grade within area of new structures, paved areas, or landscaping.

### 3.3 CLEARING

- A. Clear areas required for access to site and execution of work.
- B. Remove portions of existing on or below grade construction including, but not limited to curbs and gutter, pipes, and pads. Remove base rock underneath paved areas. Sawcut construction where adjacent portions are to remain.

### 3.4 STRIPPING

- A. Strip areas to be further excavated or to receive fill, paving, or other improvements. Strip down to clean mineral materials as determined by the City's Geotechnical Engineer.
- B. Stockpile all strippings in a stockpile area located within the contractor staging area as directed and approved by the City's Representative. Stockpiled material shall have heavy tarp/fabric between stockpile and soil below to allow for complete removal of stockpiled material without disturbing or mixing material below.

### 3.5 EXCAVATION

- A. After stripping, excavate areas to required elevations.
- B. Excavate all soft or weak zones exposed in the excavated surface not readily capable of compaction in place.
- C. Obtain approval from the City's Representative based on recommendations from the City's Geotechnical Engineer that all unsuitable materials have been removed prior to terminating excavation.
- D. Perform stockpiling as follows:
  - 1. Stockpile excavated materials accepted for later use as fill in the contractor staging area as directed by the City's Representative. Stockpiles on soil will require heavy fabric underneath to assure full removal of stockpiled material.
  - 2. Excavate, handle and remove stockpiled material for use in a manner such that loss of material and contamination with other soils are minimized.
  - 3. Place material in stockpile in a neat embankment without compaction.

- E. Where excavation is carried below specified depth, backfill with structural concrete or engineered fill as directed by the City's Representative.

### 3.6 FILLING AND BACKFILLING

#### A. Preparation for filling:

1. Remove forms, rubbish, and deleterious materials in areas to be backfilled and obtain acceptance from the City's Representative based on recommendations from the City's Geotechnical Engineer that unsuitable materials have been removed.
2. Scarify and recompact surface of areas to receive fill to eight inch depth minimum and until surface is free of ruts or other uneven surface features.
3. Cut out soft areas not readily capable of compaction in place.
4. Bring scarified material to proper moisture content as specified in the Geotechnical Investigation. Thoroughly mix soil and water to achieve uniform moisture content.
5. Compact scarified materials to minimum compaction requirements specified for fill.
6. Stabilize surface that is unstable or "pumping", by additional excavation and placement of engineered backfill as directed by the City's Representative.

#### B. Placing and Compacting Fill:

1. Place fill materials as required to establish elevations and grades shown.
2. Spread fill material in uniform lifts not exceeding eight inches in uncompacted thickness.
3. Before compaction begins, bring fill to moisture content as specified by the City's Geotechnical Engineer, which will permit proper compaction by either aerating material if it is too far above optimum moisture content, or by spraying material with water if it is too far below optimum moisture content.
4. In new asphalt concrete pavement areas, the 8 inches of subgrade, and nine inches of aggregate base, should be compacted to a minimum of 95% of its maximum dry density.
5. Mix each lift thoroughly before compaction to provide uniform distribution of moisture content.
6. Compact each layer uniformly to specified relative compaction. Compaction by flooding, ponding or jetting will not be permitted.
7. Scarify and recompact any layer not attaining compaction until specified minimum compaction is obtained.
8. Stabilize any layer not attaining compaction before placing the next lift.
9. Remove all intrusive water and dry subgrade and fill to proper moisture content where water enters areas to be filled. Re-establish compaction specified in last layer before proceeding with operations.

- C. Preparation for Backfilling:
  - 1. Verify areas to be backfilled are free of debris, formwork, and water.
- D. Placing and Compacting Backfill:
  - 1. Place and compact backfill in accordance with requirements for placing and compacting fill.
- E. Schedule of Locations:
  - 1. The paragraphs below identify location, fill material to be used (identified from upper to lower fill type), compacted thickness of each fill, and minimum relative compaction.
    - a. Fill for under new pavement areas as shown on the plans, shall be a minimum of eight inches native fill scarified and recompacted to 92% relative compaction, over aggregate base compacted to 95%.
    - b. Note that the upper foot of backfill in landscaped and unimproved areas should consist of Native Material based on information provided by the City's Geotechnical Engineer.

### 3.7 GRADING

- A. Bring all areas to proper grade, with allowance for finish materials, to the following tolerances:
  - 1. Paved areas: Plus 0 or minus 0.10 feet.
  - 2. Other areas: Plus or minus 0.20 feet.
- B. Grade areas to smooth uniform surface in conformity to contour lines and spot elevations noted. Grade to a plane where not otherwise indicated. Round or smooth abrupt changes in slopes including the intersection of cut or fill slopes with existing natural grade. Refill any settled grades to required levels.
- C. Scarify native subgrade at paved areas to a depth of eight inches, moisture condition, and compact to 95 percent relative compaction in accordance with requirements for placing and compacting fill.
- D. Perform no further excavation or filling operations after grading is completed except by the City's Representative's approval and under observation of the City's Geotechnical Engineer.

### 3.8 DISPOSAL

- A. Surplus material and debris becomes property of the Contractor for off-site disposal in accordance with applicable state and local codes, ordinances, and regulations.

### 3.9 PROTECTION

- A. Prevent erosion of graded areas during construction and until permanent drainage and erosion control measures are installed.

### 3.10 FIELD QUALITY CONTROL

- A. Inspection and testing will be performed under provisions of Section 01 45 00 – Quality Control.
- B. The City’s Geotechnical Engineer will:
  - 1. Test any fill material from source designated by the Contractor and any site materials stockpiled for use as fill; observe excavation and check stability of subgrade, compacted fill, and backfill.
  - 2. Be present at the site intermittently during conduct of work to observe performance of work and soil conditions encountered.
  - 3. Perform laboratory and field density tests to evaluate compaction achieved.
  - 4. Observe and provide engineering opinions as to adequacy of excavation, compaction of subgrade, and placement and compaction of fill and backfill. Engineering opinions will be based on observations of work performed as well as tests and inspections deemed necessary by the City’s Geotechnical Engineer to ensure compliance with the Contract Documents.
  - 5. Observe methods of compaction and report findings to the City’s Representative.
  - 6. Issue final report to the City’s Representative on grading; include opinion regarding degree of compliance with specifications.
- C. The Contractor will:
  - 1. Cooperate with the City’s Geotechnical Engineer in all aspects of the work.
  - 2. Notify the City’s Representative and the City’s Geotechnical Engineer at least 48 hours prior to required observation or testing.
  - 3. Be responsible for expense of all retesting of subgrade, fill, aggregate base, backfill, or other controlled material found to be inadequate at first testing, including fees for travel, personnel time, laboratory expenses, office work, supervision, and testing which may be incurred by reason of such retesting. The City’s Representative will deduct such expenses from monies due the Contractor under the Contract.
- D. No earthwork shall be performed without direct knowledge of the City’s Geotechnical Engineer unless otherwise directed by the City’s Representative.

END OF SECTION 31 05 13

SECTION 311000 - SITE CLEARING

PART 1 GENERAL

1.1 SCOPE

- A. Provide all material, labor, equipment and services necessary to do all the clearing at work site for site improvements and other related items necessary to complete the Project as indicated by the Contract Documents unless specifically excluded. Confine cleared areas to minimum area required to accomplish proposed work

1.2 SECTION INCLUDES DEMOLITION WORK

- A. Locate existing utilities and protect or temporarily relocate as needed to maintain operation as needed.
- C. Remove trees and root system of trees and shrubs where authorized.
- D. Remove existing utilities where said utilities are indicated to be removed on the construction plans.
- E. Remove all buried objects encountered.
- F. Coordinate clearing work with the City.
- H. Remove existing manhole lids, collars and cone sections where shown on the plans.

1.3 RELATED SECTIONS

- 1. Section 31 05 13 – Earthwork
- 2. Section 31 23 17 - Trenching

PART 2 PRODUCTS

2.1 MATERIALS - Not Used

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify that existing plant life to be removed has been authorized for removal.
- B. Examine site and compare individual work sites with Drawings and Specifications
- C. Thoroughly investigate and verify conditions under which the work is to be performed.
- D. No allowance will be made for extra work resulting from negligence or failure to meet requirements of Paragraphs 31 10 00/3.01 A, B, and C.

3.2 PROTECTION

- A. Locate, identify, and protect utilities that remain from damage.

- B. Protect trees, plant growth, and features not specifically designed for removal per according to the tree protection plan and Section 31 12 00 – existing plants are to remain.
- C. Protect existing structures and other existing improvements from damage or displacement.
- D. Protect salvageable signs, fences, fence posts and other improvements for reinstallation. Store in secured location approved by the City.

### 3.3 CLEARING

- A. Clear only limited areas required for execution of work at proposed improvement location.
- B. Remove paving where only authorized and necessary to execute the work.
- C. Remove only trees and shrubs authorized for removal.

### 3.4 REMOVAL

- A. Remove debris, organic matter, vegetation, trees and shrubs from the site and lawfully dispose of offsite at the County landfill or other approved site off Campus.
- B. Asphalt paving where designated on the plans shall be cold milled to the satisfaction of the City's Geotechnical Engineer.

### 3.5 BURIED OBJECTS ENCOUNTERED

- A. Remove and dispose of all undesirable buried objects not to remain (including rock, debris, footings, and foundations, abandoned utilities, etc.) which are encountered in the grading, trenching or subgrade preparation.
- B. Where excavating through tree roots, perform work by hand and cut roots with a saw. Roots larger than 2 inches in diameter shall remain unless authorized for removal by City's Arborist.

### 3.6 SECTION INCLUDES DEMOLITION WORK

- A. Establish new conduit locations with appropriate offsets to allow for trenching work.
- B. Retain the services of a civil engineer or land surveyor, licensed in the State of California, for layout and as-built surveys.
- C. Reset stakes, if required or disturbed during construction
- D. Reset benchmark if required.
- E. Define locations of paving walks and other site features including underground utility locations.
- F. Verify inverts or flowlines of existing utility structures adjacent to site or to be connected to, including but not limited to stubs, laterals, catch basins, junction boxes and manholes.



GLEN CANYON ROAD AND GREEN HILLS ROAD  
BIKE LANES PROJECT  
CITY OF SCOTTS VALLEY, DPW

SEPTEMBER 22,2017

END OF SECTION 31 10 00

## SECTION 321123 - AGGREGATE BASE COURSE

### PART 1 GENERAL

#### 1.1 SUMMARY

##### A. Section Includes

1. New Class 2 Aggregate Base Course for new asphalt concrete pavement areas and trenching areas as shown on the plans.

##### B. Related Sections

1. Section 31 05 13 – Earthwork
2. Section 31 23 17 – Trenching
3. Section 32 12 16 – Flexible Pavement
4. Section 03 30 00 – Concrete Site Work

#### 1.2 REFERENCES

- A. Standards listed below, with their designation in parenthesis, apply where designation is cited in this Section. Where the applicable year of adoption or revision is not listed below, the latest edition applies.

- B. State of California, Department of Transportation's "Standard Specification's" (CSS).

1. Interpretation of Standard Specifications:

- a. Wherever the term Commission of Department occurs, it shall mean the City. Whenever the term Director or Executive Officer occurs, it shall mean the City's Representative.
    - b. All references to statistical testing are deleted.
    - c. Whenever a discrepancy occurs between the Standard Specifications and this specification, this specification governs.

- C. State of California, Department of Transportation's "Testing Manual", "Method of Preparation of Bituminous Mixtures for Testing" (California Test 304).

- D. American Society for Testing and Materials (ASTM).

#### 1.3 SUBMITTALS

- A. Submit the following:

1. Certificates of compliance with specified standards for natural materials and manufactured items.
  3. For manufactured items, the manufacturer's technical data of physical properties.
  3. Samples as requested by the City's Testing Laboratory.

#### 1.4 DEFINITIONS

- A. (Pavement) Subgrade: The material in excavation or embankments underlying the lowest layer of subbase, base, pavement surfacing or other specified layer which is to be placed. (The surface upon which embankment is to be placed is sometimes called "subgrade" in other sections, not to be confused with pavement subgrade).

- B. Structural Section: The planned traffic support layers of specified materials, normally consisting of subbase, base, and pavement placed over the pavement subgrade. The structural section is also commonly called the pavement structural section.
- C. Subbase: A layer of aggregate of designed thickness and specified quality placed on the pavement subgrade as the foundation for a base.

## 1.5 SITE CONDITIONS

- A. Comply with all requirements of the Monterey Bay Unified Air Pollution Control District.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Aggregate Base (AB): Class 2, R-value 78 minimum, 3/4 inch maximum size, meeting the requirements of CSS Section 26.
- B. Aggregate Subbase: Class 2, R-value 50 minimum, CSS Section 25.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to receive aggregate base and verify the following:
  - 1. That abutting improvements have been set at proper elevations.
  - 2. That gradients and elevations of pavement subgrade are correct.
  - 3. That wet receiving surfaces or other conditions that adversely affect execution of this Work are absent.
- B. Do not start Work until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. If after initial preparation, the pavement subgrade is allowed to stand or is used by construction equipment, or is otherwise damaged, repair in accordance with CSS 26-1.03 at no additional cost to the City.
- B. Proof-roll the pavement subgrade for pumping as defined in Section 31 05 13. Where moisture appears on the pavement subgrade surface after rolling, repair as directed by Strategic Construction Management, at no additional cost to the City.
- C. Protect existing Work from damage. Protect concrete Work from staining with asphalt materials. Shield from overspray.
- D. Damaged asphalt and areas completely saturated by oil and grease should be removed and replaced as required.

### 3.3 AGGREGATE BASE

- A. Spread and compact in accordance with CSS Section 26, to thickness, lines and grades noted, with a maximum deviation of plus 0.0 and minus 0.05 feet from plan grade.
- B. Do not incorporate into the completed section any base material used for construction traffic.
- C. Moisture Treat the compacted base in accordance with CSS Section 17.

3.4 FIELD QUALITY CONTROL

- A. Inspection and testing will be performed under provisions of Section 01 45 00.
- B. The District's Testing Laboratory will:
  - 1. Inspect and test base and paving in accordance with CSS, including but not limited to
    - a. Compaction and thickness of base.
    - b. Compaction and thickness of asphaltic concrete.
    - c. Temperature of asphalt concrete just prior to paving.
  - 2. Check thickness of surfacing by coring when directed by the City's Representative.
- C. Contractor will:
  - 1. Repair areas cored for testing.
  - 2. As directed by Strategic Construction Management, remove and replace or repair all paving not meeting Contract Document requirements.

END OF SECTION 32 11 23

SECTION 321123.1 – FULL DEPTH RECLAMATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes

1. Full Depth Reclamation of existing asphalt concrete pavement areas as shown on the plans.

B. Related Sections

1. Section 31 05 13 – Earthwork
2. Section 32 12 16 – Asphalt Pavement
3. Section 32 12 16.1 – Cold Central Plan Recycled Pavement
4. Section 03 30 00 – Concrete Site Work

1.2 REFERENCES

- A. Standards listed below, with their designation in parenthesis, apply where designation is cited in this Section. Where the applicable year of adoption or revision is not listed below, the latest edition applies.

B. State of California, Department of Transportation's "Standard Specification's" (CSS).

1. Interpretation of Standard Specifications:

- a. Wherever the term Commission of Department occurs, it shall mean the City. Whenever the term Director or Executive Officer occurs, it shall mean the City's Representative.
- b. Whenever a discrepancy occurs between the Standard Specifications and this specification, this specification governs.

- C. State of California, Department of Transportation's "Testing Manual", "Method of Preparation of Bituminous Mixtures for Testing" (California Test 304).

- D. American Society for Testing and Materials (ASTM).

1.3 SUBMITTALS

A. Submit the following:

1. With the QC plan, submit the mix design as specified in CSS Section 30-4.

1.4 DEFINITIONS

- A. Lot: 1,000 sq yd of FDR—cement

1.5 SITE CONDITIONS

- A. Comply with all requirements of the Monterey Bay Unified Air Pollution Control District.

- B. Attention is directed to the Plans. Where full depth reclamation areas are identified under existing pavement, the contractor shall mill and remove millings, prior to operations for full depth reclamation.

- C. Attention is directed to the Plans for areas identified as “Lane Widening through Full Depth Reclamation”. The existing soil shall be mixed into the FDR or removed and replaced with supplemental aggregate as determined by the Contractor’s mix design testing.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Full Depth Reclamation- Cement: Quality Characteristics must comply with CSS Section 30-4.0A
- B. Supplementary Aggregate Base (AB): Class 2, R-value 78 minimum, 3/4 inch maximum size, meeting the requirements of CSS Section 26.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive full depth reclamation cement and verify the following:
  - 1. That abutting improvements have been set at proper elevations.
  - 2. That gradients and elevations of pavement subgrade are correct.
  - 3. That wet receiving surfaces or other conditions that adversely affect execution of this Work are absent.
- B. Do not start Work until unsatisfactory conditions have been corrected.

3.2 FIELD QUALITY CONTROL

- A. Inspection and testing will be performed under provisions of Section 01 45 00.
- B. Contractor will:
  - 1. Perform testing to determine the mix design in accordance with Geotechnical Engineer’s recommendations.

END OF SECTION 32 11 23

## SECTION 32 12 16 – ASPHALT PAVING

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes
  - 1. Sawcut and remove existing asphalt concrete pavement and concrete curb.
  - 2. Construct new asphalt concrete pavement section where shown on plan.
- B. Related Sections
  - 1. Section 32 11 23 – Aggregate Base Course
  - 2. Section 31 23 13 – Subgrade Preparation
  - 3. Section 31 23 17 – Trenching
  - 4. Section 31 23 24 – Flowable Fill

#### 1.2 REFERENCES

- A. Standards listed below, with their designation in parenthesis, apply where designation is cited in this Section. Where the applicable year of adoption or revision is not listed below, the latest edition applies.
- B. State of California, Department of Transportation's "Standard Specification's" Latest Edition (CSS).
  - 1. Interpretation of Standard Specifications:
    - a. Wherever the term Commission of Department occurs, it shall mean the City. Whenever the term Director or Executive Officer occurs, it shall mean the City's Representative.
    - b. Whenever a discrepancy occurs between the Standard Specifications and this specification, this specification governs.
- C. State of California, Department of Transportation's "Testing Manual", "Method of Preparation of Bituminous Mixtures for Testing" (California Test 304).
- D. American Society for Testing and Materials (ASTM).

#### 1.3 SUBMITTALS

- A. Submit the following:
  - 1. Certificates of compliance with specified standards for natural materials and manufactured items.
  - 2. For manufactured items, the manufacturer's technical data of physical properties.
  - 3. Slurry mix design. Include recommended aggregate grading, asphalt content, and supporting stabilimeter test results conforming to California Test 304. Do not schedule seal coat work until submittal has been reviewed.
  - 4. Samples as requested by the City's Testing Laboratory.

#### 1.4 DEFINITIONS

- A. (Pavement) Subgrade: The material in excavation or embankments underlying the lowest layer of subbase, base, pavement surfacing or other specified layer which is to be placed. (The surface upon which embankment is to be placed is sometimes called "subgrade" in other sections, not to be confused with pavement subgrade).

- B. Structural Section: The planned traffic support layers of specified materials, normally consisting of subbase, base, and pavement placed over the pavement subgrade. The structural section is also commonly called the pavement structural section.
- C. Subbase: A layer of aggregate of designed thickness and specified quality placed on the pavement subgrade as the foundation for a base.
- D. Surface Course: The top layer of AC pavement. The top layer of AC pavement is sometimes called the "wearing course".
- E. Pavement Reinforcing Fabric: Pavement reinforcing fabric as part of the AC overlay.
- F. Leveling Course: A layer of A.C. pavement placed over uneven surfaces and extensive cracking prior to placing pavement fabric or reinforcing mesh.

#### 1.5 SITE CONDITIONS

- A. Comply with all requirements of City of Scott's Valley.
- B. Do not place Slurry Seal or Asphalt Concrete unless atmospheric temperature is at least 50 degrees Fahrenheit and rising.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Aggregates: Asphalt Concrete (AC): Type B, 1/2 inch maximum size, medium grading, CSS Section 39.
- B. Asphalt Binder: Steam-refined paving asphalt, grade AR-8000, CSS Section 92.
- C. Prime Coat: Liquid asphalt, Grade MC-70, CSS Section 93.
- D. Paint Binder or Tack Coat: Type SS1h of SS1 asphaltic emulsion, CSS Section 94.
- E. Sand: The sand shall be 30 mesh sand blast sand composed of clean hard durable particles, free from lumps of clay or organic material.
- F. Water: The water used in all mixtures shall be fresh and potable.

#### 2.2 MIXES

- A. Asphalt Concrete (AC):
  - 1. CSS Section 39, Type B asphalt concrete, 1/2" maximum gradation.
  - 2. Determine the amount of asphalt binder in accordance with the mix design.
- B. Bituminous Seals: CSS Slurry Seal or OverKote Asphalt Paving Coating or its Equivalent.
- D. Do not change sources from those used in mix designs without prior written approval by the City's Representative.



### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas to receive asphalt concrete paving or slurry seal and verify the following:
  - 1. That abutting improvements have been set at proper elevations.
  - 2. That gradients and elevations of pavement subgrade are correct.
  - 3. That wet receiving surfaces or other conditions that adversely affect execution of this Work are absent.
- B. Do not start Work until unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Damaged asphalt and areas completely saturated by oil and grease should be removed and replaced as required.
- B. All weeds or other vegetation growing through the asphaltic concrete shall be removed and sprayed with a suitable sterilant.
- C. All areas to receive slurry shall be power broomed to remove dirt debris and other materials prior to placing the seal coat.

#### 3.3 BASE PRIME COAT

- A. After Base has been accepted by the City's Representative, place asphalt concrete paving on new aggregate base while base is still tight and damp.
- B. If base has been allowed to dry before placing asphalt concrete, apply prime coat in amount of 0.25 gallons per square yard of surface area to base in accordance with CSS Section 39, at no additional cost to City. Allow at least 24 hours for prime coat to set; remove any puddles; and spread sand over damp spots before placing asphalt concrete.

#### 3.4 PAINT BINDER

- A. Prior to placing asphalt concrete surfacing, apply a coat of asphaltic emulsion paint binder to all vertical contact surfaces in accordance with CSS Section 39 at an approximate rate of 0.10 gallons per square yard of surface covered.

#### 3.5 ASPHALT CONCRETE

- A. After prime coats have been approved by the City's Representative, spread and compact asphalt concrete paving to compacted thickness shown on Drawings in accordance with CSS Section 39, including all requirements for mix temperatures, and thickness of layers.
- B. Provide surface which is dense, smooth, tight, free from pores, loose material or segregation, within tolerances specified, and free of bird baths.
- C. Finished surface shall be no more than 0.01 feet below the bottom of a 12-foot straightedge laid on the surface in any direction.

- D. Place asphalt concrete so that finished surface will be 0" to 1/8" above edge of adjacent concrete gutters designed to collect water runoff, or 0" to 1/8" below edge of adjacent concrete designed to deposit runoff onto paved surface.
- E. Carefully roll with proper heat at edges alongside curbs, walks and driveways to match balance of rolled work. Hand tamping will be permitted only where inaccessible to heavy equipment.

### 3.6 FIELD QUALITY CONTROL

- A. The City's Testing Laboratory will:
  - 1. Inspect and test base and paving in accordance with CSS, including but not limited to:
    - a. Compaction and thickness of base.
    - b. Compaction and thickness of asphaltic concrete.
    - c. Temperature of asphalt concrete just prior to paving.
  - 2. Check thickness of surfacing by coring when directed by the City's Representative.
- B. Contractor will:
  - 1. Repair areas cored for testing.
  - 2. As directed by the City's Representative, remove and replace or repair all paving not meeting Contract Document requirements.

### 3.7 PROTECTION

- A. Permit no surface traffic until surface has cooled sufficiently to resist damage.

END OF SECTION 32 12 16

## SECTION 32 01 16.1 – COLD CENTRAL PLANT RECYCLING

### PART 1 – GENERAL

#### 1.1 DESCRIPTION

- A. Cold Central Plant Recycling is the process of milling the existing asphalt concrete pavement to the length, depth, and width as shown on the plans; transporting the millings to a temporary Cold Recycling Central Plant, mixing the cold milled material with emulsified recycling agent and other additives where required to create Recycled Asphalt Pavement (RAP); transporting the materials back to the job site, then spreading and compacting the recycled pavement mixture to the lines and grades as specified in these provisions and as shown on the plans

#### 1.2 REFERENCES

- A. Standards listed below, with their designation in parenthesis, apply where designation is cited in this Section. Where the applicable year of adoption or revision is not listed below, the latest edition applies.
- B. State of California, Department of Transportation's "Standard Specification's" Latest Edition (CSS).
  - 1. Interpretation of Standard Specifications:
    - a. Wherever the term Commission of Department occurs, it shall mean the City. Whenever the term Director or Executive Officer occurs, it shall mean the City's Representative.
    - b. Whenever a discrepancy occurs between the Standard Specifications and this specification, this specification governs.

### PART 2 - PRODUCTS (NOT USED) PART

#### 3 - EXECUTION

##### 3.1 SURFACE PREPARATION

Before recycling work begins, the Contractor shall prepare the existing roadway by:

- A. Removing from the entire roadway width dirt, vegetation, standing water, combustible materials, oils, raised roadway markings, and other objectionable materials by sweeping, blading, or other approved method.
- B. Accurately referencing the profile and cross slope as shown on the plans for the finished surface of the recycled pavement material;
- C. Accurately marking the proposed longitudinal cut lines on the existing roadway surface prior to commencement of cold- central plant recycling operations.

##### 3.2 MATERIALS

- A. Existing Materials - A summary of the existing material investigations is available to the Contractor in the Geotechnical Investigation Report prepared by Butano Geotechnical Engineering, Inc. dated April 2017.
- B. Cold Milled Asphalt Concrete- Existing asphalt concrete pavement shall be cold milled, pulverized,

crushed, or sized and screed to conform to the following gradation before mixing with emulsified recycling agent.

Sieve Sizes	Percent Passing
25-mm	100

The contractor shall separate any millings larger than 25 mm by screening or other means and break down by mechanical means to pass a 25 mm sieve. Graded millings shall uniformly be incorporated into the recycled pavement mixture and oversized or deleterious material shall be disposed of.

- C. Emulsified Recycling Agent- Emulsified recycling agent shall conform to the requirement of Section 94 “ Asphaltic Emulsions”, of the Standard Specifications except Tables 1, 2, 3, and 4 are superseded by these special provisions. Emulsified recycling agent shall conform to the following requirements:

	Test Method	Requirement	
		Minimum	Maximum
Tests on emulsion:			
Sieve test, % of weight sample	AASHTO T59 <sup>(1)</sup>	-	0.1
Residue by distillation, %	AASHTO T59 <sup>(1)</sup>	60	67
RAP Coating Test	AASHTO T59 <sup>(2)</sup>	Minimum Good	
Tests on residue by distillation:			
Penetration, 25°C, 100g 5s (Target Value) <sup>(3)</sup>	AASHTO T49 <sup>(4)</sup>	+/- 25%	
Absolute Viscosity at 60°C, poise	AASHTO T2171 <sup>(4)</sup>	Report Only	

- Note: 1. Modify AASHTO T59 – distillation Temperature of 177°C with a 20 minute hold.  
 2. Mix emulsified recycling agent and water rates shall be determined by the mix design and with jobsite RAP.  
 3. Target value shall be determined by the mix design.  
 4. Sieve residue from distillation on #20 sieve prior to determining viscosity

The Contractor shall provide current test results and a Certificate of Compliance for emulsified recycling agent at the time of mix design submittal and each load of emulsion delivered to the jobsite in conformance with these special provisions. Test results shall be from an AASHTO accredited laboratory.

During cold-in-place recycling operations, the Contractor shall obtain one 1-liter samples of emulsified recycling agent from each load delivered to the project. One sample shall be used for the Contractor’s quality control testing.

Emulsified recycling agent shall be sampled in plastic containers that are clean, dry, and sealed. After sampling, care shall be taken such that the emulsified recycling agent sample shall be handled with care and not overheated.

- D. Water- Water may be added to facilitate the uniform mixing of the emulsified recycling agent and the cold milled material.

Water used for cold central plant recycling shall be clean and free of foreign substances and shall not cause an adverse effect on either the emulsified recycling agent or the recycled pavement mixture.

Water added by the milling machine shall be measured, and the rate of added water can be between 0.5 and 5.0 percent of water added by weight of the recycled pavement mixture per the approved mix design unless a greater variation has been directed by the person designated by the Contractor to make adjustments in the field.

The quantity of residual recycling agent in the final recycled pavement mixture shall not vary due to the addition of water.

- E. Additives- Cement or lime may be added to the cold central plant recycled pavement mixture as determined by the mix design.

At the time of mix design submittal, the contractor shall inform the Engineer of the process to be used for incorporating cement or lime into the recycling process,

Lime slurry shall be produced from high-calcium quicklime or hydrated lime.

Cement shall conform to the provision in Section 90-2.01, "Portland Cement", of the Standard Specifications. Cement shall be limited to no more than 1.0 percent by dry weight of cold milled materials.

A Certificate of compliance in conformance with the provisions of Section 6-1.07, "Certificates of Compliance", of the Standard Specifications shall be furnished with each delivery of cement or lime. The Certificate of Compliance shall be submitted to the Engineer with a certified copy of the mass of each delivery.

### 3.3 CONTRACTOR QUALITY CONTROL INSPECTION, SAMPLING, AND TESTING

The contractor shall perform process and quality control sampling and testing, and exercise management control to ensure that cold central plant recycling and placement conforms to these specifications. The Contractor shall submit and quality control (QC) plan to the Engineer 14 days prior to the start of the operation. The QC plan shall include a recycling and paving plan outlining the sequence of work, including the maximum production rate for cold central plant recycling operations. The Contractor and Engineer shall meet 7 days prior to the start of cold central plant recycling operations to review the QC plan.

The Contractor shall provide a testing laboratory and personnel to perform process and quality control sampling and testing during the cold central plant recycling, spreading, compaction, and finishing. The proficiency of testing laboratories and sampling and testing personnel shall be reviewed, qualified, and accredited by the Department's Independent Assurance Program prior to providing services to the project.

Sampling and testing shall be performed at a rate sufficient to ensure that cold central plant recycling placement, compaction, and finishing conforms to these specifications. The Engineer shall have unrestricted access to the laboratory, sampling, testing sites, and all information resulting from mix design and quality control activities. All QC testing shall be submitted to the Engineer on a daily basis.

The project shall be divided into lots of 32,000 sf . The contractor shall control the cold central plant recycling operation as follows:

- A. The Contractor shall measure and record the actual recycle depth at each end of the milling drum at least once every 300 ft along the cut length.
- B. The amount of emulsified recycling agent shall be within 0.5 percent of the job mix formula established in the mix design for the cold central plant recycled asphalt concrete mixture. Emulsion usage shall be recorded for each lot. The percent emulsified recycling agent shall be determined based on the ratio of emulsion used (mass) to the theoretical dry mass of the millings processed
- C. The Contractor shall measure and report in-place density, and relative compaction for the lot, and shall rework or reprocess any lot not meeting the requirements of these specifications.
- D. Sample the recycled material behind the recycling equipment of the sized reclaimed asphalt pavement prior to the addition of emulsified recycling agent for each lot. If the reclaimed asphalt pavement does not meet the allowable maximum particle size, the test results shall be reported immediately to the Engineer. The Contractor shall reprocess the material or take other corrective action to attain conformance.
- E. On every third sample taken, the Contractor shall perform a wet field gradation for material passing the 25 mm through 4.75mm sieves. The Contractor shall compare the sieved sample to the gradation band determined from the mix design and adjust the emulsified recycling agent as needed.
- F. For each lot, the Contractor shall provide the following information:
  - Length, width, depth of cut; and calculated mass (tons) of reclaimed asphalt pavement processed.
  - Amount of emulsified recycling agent added (tons), and the amount of emulsified recycling agent added compared to the total mass of the reclaimed asphalt pavement processed in the lot (percentage).
  - Amount of any dry additives used (tons) and the amount of additive mass compared to the total mass of the reclaimed asphalt pavement processed in the lot (percentage).
  - Maximum particle size of the recycled material or the sized reclaimed asphalt pavement prior to the addition of the emulsified recycling agent.
  - Nuclear gage readings of in-place density and calculated relative compaction (based on the maximum density defined by the most appropriate rolling vs. density chart) at 10 random locations.
  - Copy of the rolling vs. density chart containing time and location of test strip that is basis for relative compaction calculations.
  - Ambient and compacted recycled surface temperatures.

Some sections of the pavement being recycled may require field adjustment for optimum results. For any changes made by the Contractor from one lot to the next, the Contractor shall document the reason for the change and identify each lot where such changes were made.

### 3.4 TEST STRIP AND START UP PROCEDURES

The first day of operations, the Contractor shall construct (within the limits to be cold central plant recycled pavement) a test strip of a single lane width and no more than 4,500 feet in length. The test strip section shall:

- A. Demonstrate that the equipment, materials, and processes proposed can produce a recycled pavement material layer that conforms to the requirements of these special provisions;
- B. Determine the optimal rates for emulsified recycling agents, additives, and water recommended for the reclaimed asphalt pavement; and

- C. Determine the sequence and manner of rolling necessary to obtain the density requirements of these special provisions.

The Contractor shall provide a sequence and manner of rolling which will define maximum compaction by establishing a rolling vs. density chart that shows the progress of densification from initial laydown through maximum obtainable density at the "break over point". The Contractor will determine relative compaction on the quantity within the test strip by measuring nuclear gage density at 10 random locations and computing the relative compaction.

If the relative compaction of quantity within the test strip or any lot does not meet the density requirements of these special provisions, the Contractor shall construct additional test strips to define the maximum density obtainable for the millings being produced; the rates of emulsified recycling agents, additives, and water; and the site conditions.

Cold central plant recycling operations may continue through the first day, unless the Contractor's equipment and process fail to meet the requirements for successful completion of cold central plant recycling operations in conformance with these special provisions. Recycling operations shall not continue until a test strip conforming to the special provisions has been constructed and approved by the Engineer. Test strips that do not conform to the special provisions shall be reworked, re-compacted, or removed and replaced at the Contractor's expense.

Upon acceptance of the test strip by the Engineer, the Contractor shall use the same equipment, materials, and construction methods for the remainder of recycling operations, unless adjustments are made by the Contractor and approved by the Engineer. If adjustments are made, the Contractor will produce a new test strip to define the maximum density.

The Contractor shall provide a report as outlined in "Contractor Quality Control Inspection, Sampling, and Testing" of these special provisions.

### 3.5 PROPORTIONING

Weighing and measuring devices used for the proportioning of ingredients, except continuous weigh belts, shall have been Type-approved by the Division of Measurement Standards, Department of Food and Agriculture, State of California. Weighing and measuring devices used in the proportioning of slurry shall be tested in conformance with California Test 109 and these special provisions.

### 3.6 COLD CENTRAL PLANT RECYCLING EQUIPMENT

#### A. General

Equipment for recycling pavement shall be capable of milling and crushing or sizing the existing asphalt pavement. The equipment used for mixing the cold millings with the emulsified recycling agent and additive shall be capable of producing a homogeneous and uniformly coated recycled pavement mixture. The equipment used for placement of the recycled pavement mixture shall be capable of placement to the lines, grades, and requirements specified in these special provisions and shown on the plans.

#### B. Pavement Milling Machine

The pavement milling machine shall be self-propelled. The primary milling equipment shall have a cutter capable of removing the existing pavement to the depths shown in the plans. Milling

equipment shall be equipped with automatic depth controls capable of maintaining the cutting depth to within 6-mm of the desired depth, and shall have a positive means for controlling cross slope.

The milling operation shall not disturb or damage the underlying material. The use of a heating device to soften the pavement will not be permitted. A smaller milling machine may be used to mill the shoulders and miscellaneous areas.

C. Crushing or Sizing Equipment

Crushing or sizing equipment shall be capable of producing reclaimed asphalt pavement to the size required prior to mixing millings with emulsified recycling agent and of routing all oversize material through the crusher and re-screening to the specified size.

D. Mixing and Proportioning Equipment

Mixing and proportioning equipment shall be capable of producing RAP which conforms to the Specifications. The mixing unit shall be equipped with a belt scale for the continuous weighing of the RAP and a coupled/interlocked computer-controlled liquid metering device. The mixing unit shall be an on-board, completely self-contained counter rotating twin shaft pugmill appropriately rated by the manufacturer for the level of production.

The liquid metering device shall be capable of automatically adjusting the flow of emulsified recycling agent to compensate for any variation in the weight of the RAP introduced into the pugmill. Emulsified recycling agent shall be metered by weight of RAP using a mass flow, Coriolis-effect-type meter capable of measuring the amount of emulsified recycling agent to within 0.5 percent of the amount required by the mix design or as adjusted in the field and approved by the Engineer. Other additives, including water as required, shall be controlled and metered based on the weight of RAP introduced into the pugmill. Additives may be introduced volumetrically or by weight in accordance with the mix design.

Automatic digital readings shall be displayed for both the flow rate and the total amount of RAP, emulsified recycling agent, and additives in appropriate units of weight and time.

Mixing and proportioning equipment shall be calibrated not less than 5 Working Days prior to the start of production. Calibration shall be performed in accordance with California Test 109. Calibration shall only be performed in the presence of the Engineer unless otherwise approved.

E. Pugmill

The pugmill shall:

- a) Operate continuously using an integrated microprocessor control system to control the weight of RAP being delivered to the mixing chamber;
- b) have automatic controls;
- c) be equipped with paddles of a type and arrangement to provide sufficient mixing and movement of RAP, emulsified recycling agent, and additives; and
- d) be configured such that no build-up of fines or other segregated material develops, and all materials entering at the feed end of the mixing chamber exit uniformly at the discharge end without clumping or resulting in a non-uniformly mixed mixture.

F. Water Storage and Supply Equipment

The water storage and supply equipment shall be capable of providing an independent water source. The water storage and supply equipment control system shall be interlocked with the mixing and



proportioning equipment control system. The water source for the emulsified recycling agent shall be independent of the water source for cement or lime slurry.

G. Portland Cement or Lime Slurry Storage and Supply Equipment

Cement or lime storage and supply equipment shall be equipped with agitators capable of keeping the cement or lime in suspension during transport or when held in the slurry feed tank.

H. Distribution and Spreading Equipment

Distribution and spreading shall be performed by operation of a self-propelled, track- equipped spreading and finishing machine (“track paver”).

The track paver shall be equipped with a fully automatic screed control system which shall be in operation at all times during placement. The system shall be either a contact (skid) or non-contact (sonic averaging) system. The skid shall be a minimum of 30-feet long, mounted on the side of the spreading and finishing machine which will receive the next mat of material, and placed in contact with the pavement surface. The sonic averaging system shall have a ski, a minimum of 24 feet long, mounted on the side of the spreading and finishing machine which will receive the next mat of material

I. Compacting Equipment

A minimum of one pneumatic-tired roller weighing 25 tons and one vibratory, double steel drum roller weighing at least 10 tons shall be on the Work site and operated during placement. Rollers shall not be less than 5-1/2 feet wide. Each roller shall have a working water spray system and working scrapers. The number of rollers used shall be consistent with the rate of CCPR material being processed and placed.

3.7 CONSTRUCTION

No cold central plant recycling work shall be performed during wet conditions, nor started if rain is imminent when the work is to be performed. No recycling work shall be performed unless the pavement temperature is a minimum of 16°C and ambient temperature is a minimum 10°C and rising. Recycling operations other than compaction shall be completed a minimum of 2 hours before sunset.

The Contractor shall ensure that there is no gap of un-recycled pavement material created between successive cuts (along the same longitudinal cut line), nor wedges of un-recycled pavement material created by the entry of the milling drum into the existing material. Longitudinal joints between successive cuts shall overlap a minimum of 4 inches.

Any unsuitable subgrade material encountered shall be excavated and disposed of in accordance with Section 19-2.02 of the Standard Specifications. Unless otherwise directed by the Engineer, the resulting space shall be backfilled with Class 2 Aggregate Base in conformance with Sections 26-1.04, "Spreading," and 26-1.05, "Compacting," of the Standard Specifications and these special provisions.

The Class 2 Aggregate Base shall be topped with Type A or B asphalt concrete or premixed bituminous surfacing equivalent in thickness to the existing asphalt concrete layer adjacent to the excavation. If premixed bituminous surfacing is used, it shall be removed and replaced with Type A or B asphalt concrete prior to placement of the final asphalt concrete surface. Asphalt concrete shall be placed in layers and compacted until the level of the existing road is reached.

The Contractor shall submit a contingency plan to the Engineer at least 14 days prior to starting the cold central plant recycling operation. The contingency plan shall describe the corrective actions the Contractor will use in the event of equipment break down. The corrective actions shall include provisions to repair and reopen the roadway to traffic, at the expense of the Contractor, using conventional asphalt concrete, cold mix asphalt concrete, or other materials approved by the Engineer.

### 3.8 MILLED SURFACE

- A. The Contractor shall furnish and operate a self-loading motor sweeper with spray nozzles for final clean up work and shall keep the milled area cleaned and maintained at all times until the street has been resurfaced.
- B. Temporary asphalt tapers must be provided where transverse joints are planed in the pavement at conform lines no drop-off shall remain between the existing pavement and the planed area when the pavement is opened to public traffic. Asphalt concrete for temporary tapers shall be placed to the level of the existing pavement and tapered on a slope of 1:60 (Vertical: Horizontal) or flatter to the level of the planed area.
- C. Asphalt concrete for temporary tapers shall be of commercial quality and may be spread and compacted by any method that will produce a smooth riding surface. Temporary asphalt concrete tapers shall be completely removed, including the removal of all loose material from the underlying surface, before placing the permanent surfacing. The removed material shall be disposed of outside the highway right of way in accordance with the provisions in Section 7-1.13 of the Caltrans Standard Specifications. Operations shall be scheduled so that not more than 10 days shall elapse between the time when transverse joints are planed in the pavement at the conform lines and the permanent surfacing is placed at the conform lines.

### 3.9 SPREADING AND COMPACTION

- A. Prior to pick up by the paver, remove and dispose of all visible oversized crack filler in the cold milled material or in the recycled pavement mixture. The recycled pavement mixture shall be graded and compacted to the depth, lines, and grades established by the plans or Engineer and as required by these special provisions. The recycled pavement mixture shall exit from the mixing chamber in a manner that prevents particle segregation. Care shall be exercised while spreading to avoid segregation, tearing, or scarring of the final compacted surface.
- B. Rolling shall commence at a time interval following the milling, mixing, and spreading of the recycled pavement mixture as determined by the mix design or directed by the Contractor. Time intervals shall be based on ambient temperatures, weather, and type of emulsified recycling agent. When possible, rolling shall not be started or stopped on uncompacted material.
- C. Compacting of the recycled pavement mixture shall be completed using rollers meeting the requirements of these special provisions. The rolling pattern shall be changed when relative compaction cannot meet the requirements of these specifications:
  - There are changes in recycled pavement mixture or proportions.
  - There are changes in placement equipment or procedures.
  - There is a significant change in temperature or weather conditions or controlling factor.
  - There is major displacement and/or cracking of the recycled pavement mixture.

A new rolling pattern will be established based on a new test strip.

The final compacted surface of the recycled pavement mixture shall be free of ruts, bumps, indentations, raveling, irregularities, or segregation and shall meet the smoothness requirements of these specifications. Cold central plant recycled asphalt concrete that does not conform to these special provisions shall be reworked, re-compacted, or removed and replaced at the Contractor's expense.

D. Initial Compaction

After compaction but prior to opening the roadway to traffic, the average in-place density shall be determined based upon nuclear gage readings of 10 random locations. During in-place density testing of the compacted recycled pavement, the nuclear gauge shall be set to the recycled section thickness.

The average in-place density shall be used to calculate the relative compaction for each lot. The relative compaction shall be not less than 95 percent or greater than 105 percent of the maximum density obtained in the test strip as required in these special provisions.

If additional rolling does not achieve relative compaction, a new rolling pattern shall be established such that a new maximum density is determined. However, care should be taken not to over-roll the mat based on visual observations of check cracking or shoving.

After initial compaction has been achieved, and prior to opening the recycled pavement mixture to traffic, the Contractor shall apply a flush coat to the recycled pavement surface. The flush coat shall be emulsified asphalt that has been diluted 50 percent by volume with water. The flush coat shall be applied to the finished surface at a rate of 0.25 to 0.55 liters per square meter (0.05 to 0.12 gallons per square yard). The rate of application shall be determined by the Contractor and shall be such that a stable and safe roadway surface can be maintained until the surface is overlaid. Immediately following application of the flush coat, the cold in-place recycled pavement surface shall be covered with sand at a rate of 1.0 to 2.0 pounds per square yard (0.5 to 1.0 kg per square meter). The exact rate will be determined by the Contractor. Excess sand shall be removed from the pavement surface by sweeping. Sand shall be free from clay or organic material.

The recycled pavement shall remain in place prior to placement of the initial asphalt concrete layer either:

- For a minimum of 2 days and until there is less than 1.5 percent moisture remaining in the cold central plant recycled pavement mixture; or
- A minimum of 10 days without rainfall.

The recycled pavement shall be covered with the initial asphalt concrete layer in the same construction season. The contractor is responsible for maintenance of the recycled pavement mixture during winter and any damaged area shall be replaced with the same depth of hot mix asphalt.

Any subsequent surface treatment or overlay of the recycled pavement shall not be placed until the relative compaction of the recycled pavement layer is not less than 95 percent or greater than 100 percent of the maximum density determined by a test strip conducted on the recycled pavement at the time of paving.

E. Release to Traffic

Prior to opening the recycled pavement to traffic, signs shall be furnished and placed adjacent to both sides of the traveled way where recycling operations are being performed on a traffic lane. The first C6 sign in each direction shall be placed where traffic first encounters a recycling location, regardless of which lane the recycling is being performed on. The W6 (35) signs need not be placed in those areas with posted speed limits of less than 40 MPH. The signs shall be placed at maximum 2000 ft intervals along each side of the traveled way and at public roads or streets entering the recycled pavement surface area as directed by the Engineer.

The C6 and W6 signs shall be maintained in place at each location until the initial layer of asphalt concrete surfacing at that location is completed. The C6 and W6 signs shall conform to the provisions for construction area signs in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications. The signs may be set on temporary portable supports with the W6 below the C6 or on barricades with the W6 sign alternating with the C6 sign.

The Contractor shall be responsible for protecting and maintaining the recycled pavement material layer until the initial layer of asphalt surfacing is placed. Any repairs required shall be at the Contractor's expense. Any damage or defects in the layer shall be repaired immediately. An even and uniform surface shall be maintained.

F. Smoothness

When a straightedge 11 ft  $\pm$  3 ft long is laid on the finished recycled surface and parallel with the centerline, the surface shall not vary more than 0.12 ft from the lower edge of the straightedge. The transverse slope of the finished surface shall be uniform to a degree such that no depressions greater than 0.24 ft are present when tested with a straightedge 11 ft  $\pm$  3 ft long laid in a direction transverse to the center line and extending from edge to edge of a 11 ft traffic lane.

Areas of the completed surface that do not meet the specified surface tolerances shall be brought within tolerance by a method chosen by the Contractor and approved by the Engineer.

Deviations in excess of 0.3 inches that cannot be brought into specified tolerance shall be corrected by removal and replacement. Replaced material shall meet the tolerances specified above.

Corrective work shall be at the Contractor's expense except that flagging costs will be paid for in conformance to the provisions in Section 12-2, "Flagging," of the Standard Specifications. The Contractor shall profile the areas that have received corrective work until the final profile of the area is within the specified tolerance.

The Contractor shall provide, while performing straightedge operations, a shadow vehicle. The shadow vehicle shall consist of a truck mounted crash cushion conforming to "Traffic Control System for Lane Closure" of these special provisions. The shadow vehicle shall operate within a stationary lane closure. The shadow vehicle shall maintain a 75 to 80 foot distance from the straightedge operation at all times.

END OF SECTION 32 01 16.1

## SECTION 32 17 23.1 GENERAL PAVEMENT MARKINGS REQUIREMENTS

### PART 1 GENERAL

#### 1.01 SECTION INCLUDES

- A. Bike lane and roadway lane markings.

#### 1.02 REFERENCE STANDARDS

- A. G-3 Ballotini Ground Glass; Retro-Reflective; Rev. D, 2007.
- B. FHWA MUTCD - Manual on Uniform Traffic Control Devices for Streets and Highways; U.S. Department of Transportation, Federal Highway Administration; <http://mutcd.fhwa.dot.gov>; current edition.

#### 1.03 FIELD CONDITIONS

- A. Do not install products under environmental conditions outside manufacturer's absolute limits.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Thermoplastic Materials: Shall conform to the Section 84-2 of the State Standard Specifications.
- B. Bike Lane and Road Pavement markings shall be thermoplastic with a non-skid surface.
- C. Reflective pavement markers.
- D. For thermoplastic application the following composition shall be used with maximum thickness of 0.12 inches (3.0 mm):
  - a. Binder 20% (18% min)
  - b. Crushed Glass Beads 20% (15% min)
  - c. TiO<sub>2</sub> Pigment 10% (7%)
  - d. Filler 35% (37% max)
  - e. Cullet 15% (10% min)
  - f. The crushed glass cullet in such mixture shall be produced from cullet of clear glass, with maximum size of 850 micrometers (100% passing by weight) and a minimum size of 425 micrometers (0-5% passing by weight). The skid resistance shall be a minimum of 55 BPN.

#### 3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
  - 1. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods.
- B. Where oil or grease are present, scrub affected areas with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application; after cleaning, seal oil-soaked areas with cut shellac to prevent bleeding through the new paint.

#### 3.03 INSTALLATION

- A. Do not apply paint if temperature of surface to be painted or the atmosphere is less than 50 degrees F or more than 95 degrees F.

- B. Apply in accordance with manufacturer's instructions using an experienced technician that is thoroughly familiar with equipment, materials, and marking layouts.
- C. Comply with FHWA MUTCD manual (<http://mutcd.fhwa.dot.gov>) for details not shown.
- D. Apply uniformly painted markings of color(s), lengths, and widths as indicated on the drawings true, sharp edges and ends.
  - 1. Apply paint in one coat only.
  - 2. Wet Film Thickness: 0.015 inch, minimum.
  - 3. Length Tolerance: Plus or minus 3 inches.
  - 4. Width Tolerance: Plus or minus 1/8 inch.
- E. Roadway Traffic Lanes: Use suitable mobile mechanical equipment that provides constant agitation of paint and travels at controlled speeds.
  - 1. Conduct operations in such a manner that necessary traffic can move without hindrance.
  - 2. Place warning signs at the beginning of the wet line, and at points well in advance of the marking equipment for alerting approaching traffic from both directions. Place small flags or other similarly effective small objects near freshly applied markings at frequent intervals to reduce crossing by traffic.
  - 3. If paint does not dry within expected time, discontinue paint operations until cause of slow drying is determined and corrected.
  - 4. Skip Markings: Synchronize one or more paint "guns" to automatically begin and cut off paint flow; make length of intervals as indicated.
  - 5. Use hand application by pneumatic spray for application of paint in areas where a mobile paint applicator cannot be used.
- F. Symbols: Use a suitable template that will provide a pavement marking with true, sharp edges and ends, of the design and size indicated.

### 3.04 DRYING, PROTECTION, AND REPLACEMENT

- A. Protect newly painted markings so that paint is not picked up by tires, smeared, or tracked.
- B. Provide barricades, warning signs, and flags as necessary to prevent traffic crossing newly painted markings.
- C. Allow paint to dry at least the minimum time specified by the applicable paint standard and not less than that recommended by the manufacturer.
- E. Remove and replace markings that are applied at less than minimum material rates; deviate from true alignment; exceed length and width tolerances; or show light spots, smears, or other deficiencies or irregularities.
- F. Remove markings in manner to avoid damage to the surface to which the marking was applied, using carefully controlled sand blasting, approved grinding equipment, or other approved method.

END OF SECTION