

DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

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March 22, 2013

06-Ker-119-19.7/30.4
06-0Q3604
Project ID 0613000060

Addendum No. 1

Dear Contractor:

This addendum is being issued to the contract for CONSTRUCTION ON STATE HIGHWAY IN KERN COUNTY NEAR BAKERSFIELD FROM ROUTE 5/119 SEPARATION TO WIBLE ROAD.

Submit bids for this work with the understanding and full consideration of this addendum. The revisions declared in this addendum are an essential part of the contract.

Bids for this work will be opened on Tuesday, April 9, 2013.

This addendum is being issued to revise the Project Plans, the Notice to Bidders and Special Provisions, and the Bid book.

Project Plan Sheets 1, 2, 3 and 10 are revised. Copies of the revised sheets are attached for substitution for the like-numbered sheets.

In the Special Provisions, Section 15-2.02B(3), "Cold Planing Asphalt Concrete Pavement," is added as attached.

In the Special Provisions, Section 30-4, "COLD IN-PLACE RECYCLING," is revised as attached.

In the Special Provisions, Section 39-1.17, "DATA CORES," is added as attached.

In the Bid book, in the "Bid Item List," Items 23 is added as attached.

To Bid book holders:

Replace page 4 of the "Bid Item List" in the Bid book with the attached revised page 4 of the Bid Item List. The revised Bid Item List is to be used in the bid.

Inquiries or questions in regard to this addendum must be communicated as a bidder inquiry and must be made as noted in the Notice to Bidders section of the Notice to Bidders and Special Provisions.

Indicate receipt of this addendum by filling in the number of this addendum in the space provided on the signature page of the Bid book.

Submit bids in the Bid book you now possess. Holders who have already mailed their book will be contacted to arrange for the return of their book.

Inform subcontractors and suppliers as necessary.

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This addendum and attachments are available for the Contractors' download on the Web site:

http://www.dot.ca.gov/hq/esc/oe/project_ads_addenda/06/06-0Q3604

If you are not a Bid book holder, but request a book to bid on this project, you must comply with the requirements of this letter before submitting your bid.

Sincerely,



sh SHARRI BENDER EHLERT
District Director
District 6 Central Region

Attachments

Replace section 15-2.02B(3) with:

15-2.02B(3) Cold Planing Asphalt Concrete Pavement

15-2.02B(3)(a) General

Schedule cold planing activities to ensure that cold planing, placement of HMA, and reopening the area to traffic is completed during the same work shift.

If you do not complete HMA placement before opening the area to traffic, you must:

1. Construct a temporary HMA taper to the level of the existing pavement
2. Place HMA during the next work shift
3. Submit a corrective action plan that shows you will complete cold planing and placement of HMA in the same work shift. Do not restart cold planing activities until the Engineer approves the corrective action plan.

15-2.02B(3)(b) Materials

Use the same quality of HMA for temporary tapers that is used for the HMA overlay or comply with the specifications for minor HMA in section 39.

15-2.02B(3)(c) Construction

15-2.02B(3)(c)(i) General

Do not use a heating device to soften the pavement.

The cold planing machine must be:

1. Equipped with a cutter head width that matches the planing width. If the cutter head width is wider than the cold plane area shown, submit to the Engineer a request for using a wider cutter head. Do not cold plane unless the Engineer approves your request.
2. Equipped with automatic controls for the longitudinal grade and transverse slope of the cutter head and:
 - 2.1. If a ski device is used, it must be at least 30 feet long, rigid, and a 1-piece unit. The entire length must be used in activating the sensor.
 - 2.2. If referencing from existing pavement, the cold planing machine must be controlled by a self-contained grade reference system. The system must be used at or near the centerline of the roadway. On the adjacent pass with the cold planing machine, a joint-matching shoe may be used.
3. Equipped to effectively control dust generated by the planing operation
4. Operated so that no fumes or smoke is produced.

Replace broken, missing, or worn machine teeth.

15-2.02B(3)(c)(ii) Grade Control and Surface Smoothness

Furnish, install, and maintain grade and transverse slope references.

The depth, length, width, and shape of the cut must be as shown or as ordered. The final cut must result in a neat and uniform surface. Do not damage the remaining surface.

The completed surface of the planed asphalt concrete pavement must not vary more than 0.02 foot when measured with a 12-foot straightedge parallel with the centerline. With the straightedge at right angles to the centerline, the transverse slope of the planed surface must not vary more than 0.03 foot.

Where lanes are open to traffic, the drop-off of between adjacent lanes must not be more than 0.15 foot.

15-2.02B(3)(c)(iii) Temporary HMA Tapers

If a drop-off between the existing pavement and the planed area at transverse joints cannot be avoided before opening to traffic, construct a temporary HMA taper. The HMA temporary taper must be:

1. Placed to the level of the existing pavement and tapered on a slope of 30:1 (horizontal:vertical) or flatter to the level of the planed area
2. Compacted by any method that will produce a smooth riding surface

Completely remove temporary tapers before placing permanent surfacing.

15-2.02B(3)(c)(iv) Remove Planed Material

Remove cold planed material concurrent with planing activities so that removal does not lag more than 50 feet behind the planer.

15-2.02B(3)(d) Payment

Payment for removal of pavement markers, thermoplastic traffic stripe, painted traffic stripe, and pavement marking within the area of cold planing is included in the payment for cold plane asphalt concrete pavement of the types shown in the Bid Item List.

**Replace section 30-4 with:
30-4 COLD IN-PLACE RECYCLING**

30-4.01 GENERAL

30-4.01A Summary

Section 30-4 includes specifications for constructing the pavement using cold in-place recycling (CIR) as shown.

CIR consists of:

1. Cold planing the existing asphalt concrete pavement
2. Mixing the cold-planed material with an emulsified recycling agent (ERA) and cement
3. Spreading and compacting the mixture
4. Applying an asphaltic emulsion (fog seal coat) and sand cover

30-4.01B Definitions

lot: 3000 sq yd or fraction thereof of CIR pavement constructed in the same day.

break-over point: Maximum density of the CIR section achieved when nuclear density tests do not show an increase in density after additional compaction passes.

30-4.01C Submittals

30-4.01C(1) General

At least 20 days before starting CIR activities, submit:

1. Mix design on a *Cold In-Place Recycling Mix Design* form. The mix design submittal must be signed and sealed by an engineer who is registered as a civil engineer in the State.
2. JMF on a *Job Mix Formula* form.
3. QC plan. The QC plan must describe the organization and procedures you will use to:
 - 3.1. Control the quality characteristics
 - 3.2. Determine when corrective actions are needed (action limits)
 - 3.3. Implement corrective actions
4. Contingency plan for actions you will take to ensure the roadway will be open to traffic at the end of each work shift. The contingency plan must include provisions for constructing a temporary structural section and reopening the roadway to traffic.
5. Process for incorporating cement to be used into the CIR mixture.
6. Two 0.5-gal samples of emulsified recycling agent.

With your QC plan submittal, include copies of the forms to be used for inspection records and for sampling and reporting test results. Each inspection record form must show all JMF design information.

During CIR activities, submit the following items daily:

1. QC inspection records and sampling and test results
2. 0.5-gal sample of emulsified recycling agent from each load delivered to the job site within 1 hour of sampling
3. Batch logs for cement slurry production
4. Spread rate log for dry cement or cement slurry application
5. Dilution data for asphaltic emulsion (fog seal coat)

For each lot, measure or calculate, and record the following information:

1. Length, width, depth of cut at each end of the milling drum at least every 300 feet along the cut length, and calculated weight in tons of material processed
2. Weight of emulsified recycling agent added in tons
3. Percentage of added emulsified recycling agent in the lot's CIR mixture by weight
4. Weight of cement used in tons
5. Percentage of cement in the lot's CIR mixture by weight
6. Maximum particle size of the RAP before the addition of the emulsified recycling agent
7. Break-over point density used for relative compaction calculation
8. Nuclear gauge in-place density and relative compaction at 10 random locations
9. Ambient and compacted recycled pavement surface temperatures
10. Maximum theoretical density under California Test 309 and void ratio (report only)
11. Rate of asphaltic emulsion (fog seal coat) application
12. Rate of sand cover application

For each lot, submit a report each day that includes the following items based on the frequencies specified in section 30-2.01D(5):

1. General Information:
 - 1.1. Lot number
 - 1.2. Location description
 - 1.3. Beginning and ending station
 - 1.4. Lane number and offset from centerline
 - 1.5. Weather:
 - 1.5.1. Ambient air temperature before beginning daily CIR activities including time of temperature reading
 - 1.5.2. Ambient road surface temperature before beginning daily CIR activities including time of temperature reading
2. Asphalt binder
 - 2.1. Injection rate from controller
 - 2.2. Expansion ratio
 - 2.3. Half-life
 - 2.4. Temperature in degrees F from thermometer in the asphalt binder feed line for each truck load
3. Calculated cement application rate by lb/sq yd and percent dry weight of CIR
4. Calculated aggregate base application rate by lb/sq yd and percent dry weight of CIR when aggregate base is specified
5. Water application rate by theoretical percent dry weight of CIR from the controller
6. For CIR processing
 - 6.1. Depth of cut
 - 6.2. Average forward speed
7. CIR quality control test results for:
 - 7.1. Gradation
 - 7.2. Moisture content
 - 7.3. In-place wet density
 - 7.4. Relative compaction
8. CIR core thickness in feet and location of coring
9. For asphalt emulsion used on finished CIR surface:
 - 9.1. Emulsion type
 - 9.2. Emulsion application rate in gal/sq yd
 - 9.3. Emulsion dilution as the weight ratio of added water to asphaltic emulsion
10. Note on the daily report the postmile or station limits of any unsuitable materials locations and when the Engineer was notified

30-4.01C(2) Certificates

Submit certificates of compliance for the cement and emulsified recycling agent with each delivery. Include the manufacturer's test results for the emulsified recycling agent with your certificate of compliance. The test results must be from material tested within 30 days of delivery.

Submit a certified copy of each delivery's weight for emulsified recycling agent, cement, sand, and asphaltic emulsion (fog seal coat).

30-4.01C(3) Testing and Inspection Records

Submit test results for the material requirements of the emulsified recycling agent daily during CIR activities.

During initial and supplemental compaction of CIR, submit QC inspection records and test results of samples taken.

30-4.01D Quality Control and Assurance

30-4.01D(1) General

Provide a testing laboratory and personnel for quality control testing. The laboratory for testing emulsified recycling agent and aggregate qualities and preparing the mix design and JMF must be qualified under AASHTO Materials Reference Laboratory program and the Department's Independent Assurance Program.

If you spread cement directly to the existing pavement, take surface area measurements to calculate applied spread rate. Submit a daily log with the quantity of cement used, area covered, and certified weight tickets.

If you adjust the application rate of emulsified recycling agent or cement during CIR activities, keep records of the adjustments and notify the Engineer.

For any lot including the test strip, stop CIR activities and immediately inform the Engineer whenever any test result does not comply with the requirements shown in the table titled "Quality Control Requirements" in section 30-4.01D(4). If CIR activities are stopped for noncompliance, before resuming activities:

1. Notify the Engineer of the adjustments you will make
2. Reprocess, remedy, or replace the noncompliant lot
3. Obtain the Engineer's authorization

30-4.01D(2) Prepaving Conference

At least 10 days before starting CIR activities, hold a prepaving conference with the Engineer at a mutually agreed place and time.

The following personnel must attend the prepaving conference:

1. The Engineer
2. Project manager
3. Project superintendent
4. QC manager
5. Workers and your subcontractor's workers, including:
 - 5.1. Foremen
 - 5.2. CIR equipment operators
 - 5.3. Paver and compacting equipment operators
 - 5.4. Ground supervisors
 - 5.5. Representative from testing lab
 - 5.6. Emulsion supplier representative

Be prepared to discuss:

1. Roles and expectations of the CIR personnel
2. Mix design
3. QC plan
4. QC sampling and testing
5. Acceptance criteria
6. Contingency plan
7. Training on cold in-place activities
8. Specific issues of cold in-place activities, including:
 - 8.1. Weather
 - 8.2. Alignment and geometrics
 - 8.3. Traffic control

30-4.01D(3) Test Strip and Startup Procedures

On the 1st day of CIR activities and within the pavement area to receive CIR, construct a test strip. The test strip must be a single lane width and at least 1,500 feet in length. The test strip must show:

1. How the equipment, materials, and processes proposed can produce the CIR mixture and its placement
2. How varying the forward speed and drum rotation rate of the cold-planing machine affect the consistency of the mixture
3. Optimum rates for emulsified recycling agents, cement, and water
4. Initial compaction rolling pattern needed to reach the break-over point

The Engineer tests the test strip under section 30-4.01D(5), except only the smoothness straightedge requirements apply to the test strip. Rework and recompact or remove and replace test strip if it does not comply with the specifications.

Do not proceed with CIR activities until the Engineer informs you that the test strip is authorized.

30-4.01D(4) Quality Control Sampling and Testing

Take samples under California Test 125.

During CIR activities, take two 0.5-gal samples of emulsified recycling agent from each load delivered to the job site in the presence of the Engineer. Use 1 sample for QC testing and submit 1 sample.

Store emulsified recycling agent samples in clean, dry, and sealed 0.5-gal plastic containers at a temperature between 40 to 100 degrees F.

For each lot:

1. Sample RAP for gradation test under California Test 202 behind the recycling equipment or the processed RAP before the addition of the emulsified recycling agent and reprocess the RAP or take other corrective action to attain compliance.
2. On every 3rd sample taken, perform a wet field gradation for material passing the 1-inch through No. 4 sieves under California Test 202. Compare the sieved sample to the gradation band determined from the JMF and adjust the emulsified recycling agent based on the actual gradation.
3. Determine in-place density and relative compaction under California Test 231 of at least 10 random locations. Use the break-over point density determined on the test strip or subsequently adjusted.

For each lot, measure or calculate, and record the following information:

1. Length, width, depth of cut at each end of the milling drum at least every 300 feet along the cut length, and calculated weight in tons of material processed
2. Weight of emulsified recycling agent added in tons
3. Percentage of added emulsified recycling agent in the lot's CIR mixture by weight
4. Weight of cement used in tons
5. Percentage of cement in the lot's CIR mixture by weight
6. Maximum particle size of the RAP before the addition of the emulsified recycling agent
7. Break-over point density used for relative compaction calculation
8. Nuclear gauge in-place density and relative compaction at 10 random locations
9. Ambient and compacted recycled pavement surface temperatures
10. Maximum theoretical density under California Test 309 and void ratio (report only)
11. Rate of asphaltic emulsion (fog seal coat) application
12. Rate of sand cover application

Perform sampling and testing at the specified frequency for the quality characteristics shown in the following table:

Quality Control Requirements For CIR

Quality characteristic	Test method	Minimum sampling and testing frequency	Requirement	Sampling location	Maximum reporting time allowance
Gradation (% passing) ^a Sieve Size 1 inch	California Test 202	Test strip and 1 per lot	100	Loose mix after pulverizing and mixing	24 hours
In-place wet density (lb/cu ft)	California Test 216	Test strip and 2 per day ^c	Report only		24 hours
Relative compaction (%, min)	California Test 231	Test strip and 1 per lot	97–103 of break-over point	Compacted mix	24 hours

^aRemove solids larger than 3 inches.

^cIf lot fails minimum test frequency is 1 per lot.

If adjustments are made, document the reason for the change and identify on the daily QC inspection records and sampling and test results

Take and split a sample of the CIR mixture daily at a location determined by the Engineer. Split the samples into 2 parts and label the containers with location and station. Submit 1 split part and use 1 part for your testing. Determine maximum theoretical density under California Test 309. Use the maximum theoretical density and calculate air voids under California Test 308 for each nuclear gauge site and lot. Report air voids ratio on daily quality control inspection records and sampling and test results. The Department does not use your California Test 309 test results and void ratio to determine specification compliance.

30-4.01D(5) Acceptance Criteria

CIR acceptance is based on:

1. Visual inspection for the following:
 - 1.1. Segregation, raveling, rutting, humps, depressions, roller marks, and loose material.
 - 1.2. Uniform surface texture throughout the work limits.
 - 1.3. Repaired areas.
2. In-place density and relative compaction under California Test 231 except the break-over point is used instead of maximum wet density under California Test 216. for at least 10 random locations within a lot. Relative compaction of each individual location must be greater than or equal to 95 percent and less than or equal to 105 percent of the break-over point density obtained in the test strip. The lot's average relative compaction must be greater than or equal to 97 percent or less than or equal to 103 percent of the break-over point density in the test strip.
3. Compliance with smoothness requirements.

If the Engineer orders you to stop cold in-place recycling activities for noncompliance, before resuming activities:

1. Notify the Engineer of the adjustments you will make
2. Reprocess, remedy, or replace the noncompliant lot
3. Obtain the Engineer's authorization

30-4.01D(6) Smoothness

After completing CIR activities, determine surface smoothness under section 39-1.12.

Correct MRI greater than 75 in/mi for a 0.1 mile section and areas of localized roughness greater than 140 in/mi.

The final HMA surface MRI must be 60 in/mi or less for a 0.1 mile section.

30-4.02 MATERIALS

30-4.02A General

Water must be clean and free of deleterious materials and must not adversely affect the emulsified recycling agent and the CIR mixture.

You may add water to facilitate the uniform mixture of emulsified recycling agent and RAP. The added water rate must not exceed 4.0 percent by weight of the cold-in-place recycling mixture and must be in compliance with the approved JMF.

The residual rate of emulsified recycling agent in the cold-in-place recycling mixture must not vary due to the added water.

30-4.02B Job Mix Formula

The JMF must include RAP from the job site, an emulsified recycling agent, and cement.

The JMF must comply with Lab Procedure LP-8 and the mix design requirements in the following table:

Mix Design Requirements

Quality characteristic	Test Method	Requirement
RAP asphalt content	California Test 362 or 379 or ASTM D 2172, Method B	Report only
Bulk specific gravity of compacted samples ^{a, b}	California Test 308, Method C	Report only
Maximum theoretical specific gravity ^b	California Test 309, including Section J	Report only
Air voids of compacted and cured specimens ^b	California Test 308 and 309	Report only
Marshall Stability, cured specimen ^b at 104 °F	AASHTO T 245	1250 lbs min
Marshall retained stability ^{b, c} at 104 °F based on moisture conditioning on cured specimen	AASHTO T 245	70 % ^d min
Ratio of emulsion residue to cement	--	3.0
Raveling test at 50 °F	Lab Procedure LP-8, Section 9	7 % max
RAP coating Test	AASHTO T 59 ^e	95%

^a4-inch diameter mold compaction based on either 75 blow Marshall on each side or gyratory compactor at 30 gyrations.

^bTest specimens after 140 °F curing to constant weight between 16 hours and 48 hours.

^cVacuum saturation from 55 percent to 75 percent. Water bath at 77 °F for 23 hours, with the last 30 minutes to 40 minutes in 104 °F water bath.

^dIf the saturated Marshall Stability is at least 1500 lbs, the Marshall Retained Stability ratio may be reduced to 60%.

^eDetermine recycling agent and water application rates using RAP from the job site in the mix design and JMF.

30-4.02C Reclaimed Asphalt Pavement

Cold plane existing asphalt pavement and process to produce RAP. RAP must be processed by mechanical means to pass the 1-inch sieve.

Separate RAP larger than 1 inch by screenings or other means and dispose of RAP larger than 1-inch.

30-4.02D Emulsified Recycling Agent

Emulsified recycling agent must comply with the requirements of the following table:

Emulsified Recycling Agent Requirements

Property	Test method	Requirement	
		Minimum	Maximum
Test on emulsion:			
Sieve test, % of weight sample	AASHTO T 59	--	0.1
Residue by evaporation, % ^a	California Test 330	60	--
Test on residue by evaporation:			
Penetration at 25 °C, 100 g/ 5 sec	AASHTO T 49	40-120	

^aDetermine recycling agent and water application rates using RAP from the job site in the mix design and JMF.

30-4.02E Cement

Cement must be at least 0.25 percent but not more than 1.0 percent of the dry weight of RAP. Cement must comply with section 90-1.02B(2).

30-4.02F Temporary Structural Section

Use HMA Type A or a bituminous material to construct a temporary structural section.

The HMA Type A for the temporary structural section must include:

1. 1/2-inch aggregate grading as specified in section 39-1.02E
2. Asphalt binder grade PG 64-10 or PG 64-16 or the binder grade specified for HMA in the project
3. Method construction process as specified in section 39-3

The bituminous material for the temporary structural section must:

1. Contain aggregate using 1/2-inch HMA grading as specified in section 39-1.02E
2. Use liquid asphalt, grade SC-800

30-4.02G Asphaltic Emulsion (Fog Seal Coat)

Asphaltic emulsion (fog seal coat) must comply with the specifications for Grade SS1h or Grade CSS1h in section 94 and Section 37-2.03F(3) or the requirements for emulsified recycling agent in section 30-4.02C.

Notify the Engineer if you dilute the asphaltic emulsion with water. The ratio by weight of added water to asphaltic emulsion must not exceed 1 to 1.

Measure water either by weight or volume or you may use water meters from the local water agency. If you measure water by volume, convert volume to weight.

Each time you dilute the asphaltic emulsion, submit:

1. Weight ratio of water to bituminous material in the original asphaltic emulsion
2. Weight of asphaltic emulsion before diluting
3. Weight of added water
4. Final dilution weight ratio of water to asphaltic emulsion

30-4.02H Sand Cover

Sand used for sand cover must comply with the material specifications for fine aggregate in section 90-1.02C. Sand must not contain more than 2 percent moisture by dry weight of sand.

Sand spreader equipment must be a self-propelled mechanical device that will spread the sand at a uniform rate.

30-4.03 CONSTRUCTION

30-4.03A General

Do not disturb or damage the underlying materials during milling or cold-planing activities. Do not use a heating device to soften the pavement.

Before starting CIR activities, provide 200 tons of commercial quality bituminous surfacing material onsite for maintenance and protection of the completed CIR surface. Use liquid asphalt SC-800 in compliance with section 93 for the commercial quality bituminous surfacing material.

Use the same equipment, materials, and construction methods that were used for the authorized test strip for the remainder of the CIR work. Any adjustments must be authorized.

If the equipment or process fail to meet the specifications, stop CIR activities and notify the Engineer.

30-4.03B Surface Preparation

Before starting CIR activities, prepare the existing roadway by:

1. Removing loose material from the roadway width including:
 - 1.1. Dirt.
 - 1.2. Vegetation.
 - 1.3. Standing water.
 - 1.4. Combustible materials.
 - 1.5. Oils.
2. Accurately referencing the existing pavement's profile and cross slope. Use the profile and cross slope to establish the CIR finished surface.
3. Accurately marking the proposed longitudinal cut lines on the existing roadway surface.

30-4.03C Cold In-place Recycling Equipment

30-4.03C(1) General

The equipment for CIR must consist of recycling train for:

1. Milling or cold planing
2. Pulverizing, crushing, or sizing
3. Mixing and proportioning
4. Water storage and supply
5. Cement storage and supply
6. Cement mixing and spreading
7. CIR mixture spreading
8. Compacting
9. Fog sealing the surface
10. Spreading sand cover

Use equipment that:

1. Mills and crushes or sizes the existing asphalt pavement
2. Mixes the RAP with the emulsified recycling agent and cement into a homogeneous and uniformly coated mixture
3. Places the CIR mixture to the lines, grades, and specifications

Pulverizing, crushing, or sizing equipment must produce material to the specified size before mixing millings with emulsified recycling agent.

30-4.03C(2) Milling or Cold-planing Equipment

The milling or cold-planing machine must:

1. Be self-propelled
2. Have a 12-foot minimum cutter that can remove the existing pavement to the specified depths
3. Be equipped with automatic depth and cross slope controls capable of maintaining the cutting depth to within 0.25 inch of the specified depth

A smaller than 12 feet milling or cold-planing machine may be used for shoulders and miscellaneous areas.

30-4.03C(3) Mixing Chamber or Pugmill

Provide a continuous mixing chamber or pugmill mixing machine as part of the recycle train with either a belt scale or an integrated microprocessor control system to:

1. Control the milled pavement material delivered to the mixing chamber or pugmill by weight
2. Automatically control the amount of recycling agent and cement being delivered by weight

Equip the mixing chamber or pugmill with paddles or other suitable mixing device arranged to mix the RAP, emulsified recycling agent, and cement to produce the specified CIR mixture. Feed RAP from the pulverizing, crushing, or sizing equipment to the mixer at a uniform and controlled rate.

The paver's loading equipment must pick up the CIR mixture and deposit it in the paving machine without waste. If the paving screed is directly attached to the CIR equipment, feed the CIR mixture directly to the paving screed.

30-4.03C(4) Mixing and Proportioning Equipment

30-4.03C(4)(a) General

Use a mass flow, Coriolis effect type meter with a visible readout display, and printing capabilities.

The weighing and measuring devices for asphaltic emulsion and cement must comply with the requirements of the MPQP. You may use equipment that has successfully passed the calibration requirements of MPQP within the past 6 months.

30-4.03C(4)(b) Cement Continuous Mixing Equipment

For continuous mixing of cement slurry, the proportioning device must be capable of determining the exact ratio of water to dry cement at each production rate.

Rate-of-flow indicators and totalizers for similar materials must be accurate within 0.5 percent of each other.

The continuous mixing equipment must include:

1. Belt scale for weighing cement. The belt scale must operate between 30 to 100 percent of production capacity. The average difference between the indicated and actual material weight must not exceed 0.5 percent of the actual material weight for 3 individual runs. For each run, the indicated weight must not vary from the actual material weight by more than 1 percent of the actual weight. Test for belt scale accuracy must be for at least 0.5 tons of cement. Actual material weight must be verified on a certified scale.
2. Water meter for measuring water used in slurry. The meter must operate between 50 to 100 percent of production capacity. The average difference between the indicated and actual water weight must not exceed 1 percent of the actual weight for 3 individual runs. Test for water meter accuracy must be for at least 300 gallons of water.

Actual material weight must be verified on a certified scale.

Meters and scales must be equipped with:

1. Rate-of-flow indicators that show the delivery rates of cement and water
2. Resettable totalizers that indicate the total amount of cement and water introduced into the slurry storage tank

Feeds for water and cement must be equipped with no-flow devices that stop slurry production when either of the individual ingredients is not being delivered to the slurry storage tank.

30-4.03C(4)(c) Cement Batch Mixing Equipment

For batch-type mixing of cement slurry, the proportioning equipment must include:

1. Certified weight scale.
2. Water meter equipped with a resettable totalizer. Test for water meter accuracy must be for at least 300 gallons of water.

If an automatic controller is used to batch the cement, the controller must also control the water proportioning.

If an automatic controller is used to proportion the water, the indicated draft of the water must be within 1 percent of its total draft weight.

The meter must operate between 50 to 100 percent of production capacity. The average difference between the indicated and actual water weight must not exceed 1 percent of the actual weight for 3 individual runs.

30-4.03C(5) Water Storage and Supply Equipment

As part of the recycle train, provide an independent supplemental water source separate from the water added to the mill to cool the teeth. Interlock the supplemental water with the RAP weighing device or microprocessor to properly disperse the emulsified recycling agent.

The water source for the emulsified recycling agent must be independent of the cement slurry and be capable of maintaining a consistent water supply of 0.5 to 4.0 percent by weight of the RAP.

30-4.03C(6) Cement Storage and Supply Equipment

Provide cement slurry storage and supply equipment with agitators or similar equipment to keep the cement slurry in suspension while held in the slurry feed tank.

If cement is spread dry to the existing pavement, use a spreader capable of spreading the cement at the required weight per unit area. The spreader must have working scales and distance measuring devices to control the spread rate.

30-4.02C(7) Spreading Equipment

Spreading equipment must comply with section 39-1.10.

30-4.03C(8) Compacting Equipment

Compacting equipment must comply with sections 39-1.10 and 39-3.03. Provide a minimum of 1 pneumatic-tired roller weighing at least 25 tons and 1 double drum vibratory steel-wheeled roller weighing at least 10 tons. Rollers must be at least 5.6-foot wide. Each roller must have a working water spray system.

30-4.03D Cold In-Place Recycling

30-4.03D(1) General

Do not perform CIR activities under the following conditions:

1. Pavement surface is wet.
2. Rain is forecasted within 24 hour.
3. Pavement temperature is less than 60 degrees F.
4. Ambient temperature is less than 50 degrees F.
5. 30 minutes before sunset.

Do not leave gaps of unrecycled material between successive cuts along the same longitudinal cut line. Do not leave untreated wedges created by the entry of the milling drum into the existing pavement. Longitudinal joints between successive cuts must overlap by 4 inches minimum.

30-4.03D(2) Unsuitable Conditions

If you encounter unsuitable subgrade material, notify the Engineer immediately. Excavate and dispose of any unsuitable subgrade material encountered. Unless otherwise ordered, backfill the excavated area with Class 2 AB as specified in section 26.

Top the Class 2 AB with HMA Type A or a premixed bituminous material equivalent in thickness to the existing asphalt concrete layer adjacent to the excavation. If premixed bituminous material is used, remove and replace it with HMA Type A. Place HMA in layers and compact until the level of the CIR surface is reached.

Excavating and disposing of unsuitable material and replacing with AB and surfacing material is change order work.

30-4.03D(3) Cement

Add the cement into the recycling process by one of the following methods:

1. Add at the mill head as a slurry
2. Add directly in the pugmill as a slurry
3. Spread on the existing pavement surface ahead of the recycling train in a dry form

If you spread the cement directly to the existing pavement, do not spread more than 50 feet ahead of the recycling train. Do not spread under windy conditions and employ dust control measures to minimize fugitive dust.

Do not allow spread cement to remain exposed at the end of the work shift. Do not allow traffic other than the recycling equipment to pass over the spread cement.

30-4.03D(4) Proportioning

Using the mass flow, Coriolis effect type meter, measure the cement slurry and emulsified recycling agent before adding them into the RAP. The amount of cement slurry and emulsified recycling agent must match the amount reported in the JMF or the amount as adjusted and authorized.

Keep cement slurry in suspension during transport using agitator equipment. Keep dry cement in dry cement spreader trucks, pneumatic trailers, or silos.

30-4.03D(5) Spreading and Initial Compacting

Remove any visible oversized crack treatment material larger than 1 inch measured at any dimension in the RAP or in the CIR mixture before placement and compaction.

Do not allow segregation, tearing, or scarring of the compacted surface.

Determine the time interval between spreading and compacting CIR mixture. Establish the time interval based on ambient temperatures, weather, and type of emulsified recycling agent. Record the time intervals in the daily quality control records. Avoid starting or stopping rolling on uncompacted material.

Compact the CIR mixture by implementing the same compaction rolling pattern established in the authorized test strip.

Establish a new rolling pattern and a new maximum density if any of the following occurs:

1. Relative compaction of any of the 10 individual locations is less than 95 percent or greater than 105 percent of the break-over point density
2. Average relative compaction of the lot is less than 97 percent or greater than 103 percent of the break-over point density
3. Changes in RAP or proportions
4. Changes in equipment or procedures
5. Change in temperature or weather conditions affecting mixing and compaction temperatures of the placed mixture
6. Visible displacement or cracking occurs

Perform final rolling with a double-drum vibratory steel-wheel roller operating in static or vibratory mode.

The compacted CIR surface must be free from raveling, segregation, rutting, humps, depressions, roller marks, or irregularities. Rework, recompact, or remove and replace cold in-place recycled asphalt pavement that shows raveling, segregation, rutting, humps, depressions, roller marks, or irregularities.

30-4.03D(6) Initial In-Place Density

Before applying fog seal coat, determine the in-place density and relative compaction as specified in 30-4.01D(5).

30-4.03E Fog Seal Coat and Sand Cover

Apply fog seal coat followed by sand cover to the finished CIR surface after compaction and before opening to traffic.

After initial compaction and before opening the CIR surface to traffic, apply asphaltic emulsion fog seal coat to the surface under section 37-2.03F(3).

Close areas receiving fog seal coat to traffic until sand cover has been applied. Do not track fog seal coat onto pavement surfaces.

Apply sand cover immediately following application and break of the fog seal coat.

Spread sand at a rate of 1.0 to 2.0 lb/sq yd. Determine exact application rate of sand. Remove excess sand from the pavement surface by sweeping before opening to traffic.

30-4.03F Temporary Structural Section

Place a temporary structural section to the level of the CIR surface if:

1. You are unable to complete the CIR before opening to roadway to traffic
2. CIR fails during the maintaining period by raveling or rutting

If a bituminous material is used, remove and replace it with HMA Type A. Place HMA in layers and compact until the level of the CIR surface is reached.

30-4.03F Maintain and Protect Surface

Do not place the HMA layer until the CIR surface is in place for at least one of the following conditions:

1. 3 days and until less than 2.0 percent moisture measured at mid depth in the cold in-place recycled pavement mixture
2. 10 days without rainfall

Immediately repair any damage or defects by:

1. Reworking and recompacting the CIR surface
2. Replacing any damaged area with the same depth of cold bituminous surfacing material or HMA

30-4.03G Supplemental Compaction

Recompact the CIR surface within 48 to 72 hours after initial compaction and before smoothness testing and placement of the HMA surfacing.

Use the same equipment and rolling pattern used for the authorized test strip for supplemental compaction. Adjustments must be authorized.

Supplemental compaction must meet the relative compaction requirements specified in 30-4.01D(5).

30-4.03H Smoothness

Provide a shadow vehicle with truck mounted attenuator in compliance with section 12-3.13 while performing straightedge activities. Operate the shadow vehicle within a stationary lane closure and between 75 feet and 100 feet from straightedge operation.

After correcting for smoothness, measure the corrected cold in-place recycling surface and correct again as necessary until the surface is within specified tolerances.

30-4.04 PAYMENT

Test strips are paid for as CIR.

The Department does not adjust the unit price for an increase or decrease in the quantity for:

1. Emulsified recycling agent
2. Asphaltic emulsion (fog seal coat)
3. Cement
4. Sand cover

Replace section 39-1.17 with:

39-1.17 DATA CORES

39-1.17A General

39-1.17A(1) Summary

This work includes taking data cores and submitting the information.

Three business days before starting coring, submit proposed methods and materials for backfilling data core holes.

39-1.17A(2) Submittals

Submit the following to the Engineer and to Coring@dot.ca.gov:

1. Summary of data cores taken
2. Photograph of each data core

For each data core, the summary must include:

1. Project identification number
2. Date cored
3. Core identification number
4. Type of materials recovered
5. Type and approximate thickness of unstabilized material not recovered
6. Total core thickness
7. Thickness of each individual material to within:
 - 7.1 1/2 inch for recovered material
 - 7.2 1.0 inch for unstabilized material
8. Location including:
 - 8.1. County
 - 8.2. Route
 - 8.3. Post mile
 - 8.4. Lane number
 - 8.5. Lane direction
 - 8.6. Station

Each data core digital photograph must include a ruler laid next to the data core. Each photograph must include:

1. Core
2. Project identification number
3. Core identification number
4. Date cored
5. County
6. Route
7. Post mile
8. Lane number
9. Lane direction

39-1.17B Materials

Not Used

39-1.17C Construction

Take data cores that include the completed HMA pavement, underlying base, and subbase material. Protect data cores and surrounding pavement from damage.

Take 4- or 6-inch-diameter data cores:

1. At the beginning, end, and every 1/2 mile within the paving limits of each route on the project
2. After all paving is complete
3. From the center of the specified lane

On a 2-lane roadway, take data cores from either lane. On a 4-lane roadway, take data cores from each direction in the outermost lane. On a roadway with more than 4 lanes, take data cores from the median lane and the outermost lane in each direction.

Each core must include the stabilized materials encountered. You may choose not to recover unstabilized material, but you must identify the material. Unstabilized material includes:

1. Granular material
2. Crumbled or cracked stabilized material
3. Sandy or clayey soil

After submitting the data core summary and photograph, dispose of cores.

BID ITEM LIST
06-0Q3604

Item No.	Item Code	Item Description	Unit of Measure	Estimated Quantity	Unit Price	Item Total
21	025334	MODIFY VEHICLE CLASSIFICATION STATION	LS	LUMP SUM	LUMP SUM	
22	861502	MODIFY SIGNAL	LS	LUMP SUM	LUMP SUM	
23	153103	COLD PLANE ASPHALT CONCRETE PAVEMENT	SQYD	1,780		

TOTAL BID:

\$
