

DEPARTMENT OF TRANSPORTATION
DES-OE MS #43
1727 30TH Street, 2ND Floor
Sacramento, CA 95816



**** WARNING ** WARNING ** WARNING ** WARNING ****
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February 15, 2002

08-SBd-15-67.4/113.6
08-3555U4
ACIM-ACNHI-015-1(215)145N

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in SAN BERNARDINO COUNTY IN AND NEAR VICTORVILLE, APPLE VALLEY AND BARSTOW FROM 0.2 km SOUTH OF MOJAVE DRIVE OVERCROSSING TO 1.0 km NORTH OF ROUTE 58 SEPARATION.

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 February 28, 2002.

This addendum is being issued to revise the Notice to Contractors and Special Provisions and the Proposal and Contract.

In the Special Provisions, Section 1, "SPECIFICATIONS AND PLANS," the seventh paragraph is revised as follows:

"Complete design of Sequence 1, including final plans, specifications, and estimate of quantities will be provided to the Contractor within 5 calendar days after approval of the contract."

In the Special Provisions, Section 1, "SPECIFICATIONS AND PLANS," the following paragraph is added after the fourth paragraph:

"Some of the quantities and items listed in the Engineer's estimate are not shown on the plans."

In the Special Provisions, Section 2-1.017, "SMALL BUSINESS AND DISABLED VETERAN BUSINESS ENTERPRISE UTILIZATION AND REPORTING," is added as attached.

In the Special Provisions, Section 2-1.03, "ESCROW OF BID DOCUMENTATION," is deleted.

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In the Special Provisions, Section 5-1.17, "PAYMENTS," the second paragraph is revised to read as follows:

"For the purpose of making partial payments pursuant to Section 9-1.06, "Partial Payments," of the Standard Specifications, the amount set forth for the contract items of work hereinafter listed shall be deemed to be the maximum value of the contract item of work which will be recognized for progress payment purposes:

A. Clearing and Grubbing	\$180,000
B. Develop Water Supply	\$315,000
C. Progress Schedule (Critical Path)	\$22,500
D. Roadside Clearing	\$9,000
E. Bridge Removal	\$76,000
F. Bridge Removal (portion) Location A	\$24,000
G. Bridge Removal (portion) Location B	\$30,000
H. Bridge Removal (portion) Location C	\$48,000
I. Bridge Removal (portion) Location D	\$17,000
J. Bridge Removal (portion) Location E	\$13,000"

In the Special Provisions, Section 5-1.19, "ENDANGERED SPECIES PROTECTION," the second sentence in paragraph seven is revised as follows:

"The Contractor shall submit, in writing, a request to the Engineer for the biological pre-construction sweep. Said request shall be made at least 3 days prior to performance of any work activity at the start of the contract and 10 days prior to the performance of any subsequent work activity."

In the Special Provisions, Section 8-1.06, "ASPHALT," is added as attached.

In the Special Provisions, Section 10-1.01, "ORDER OF WORK," the second sentence in paragraph eight is revised as follows:

"Construction of the Design Sequence 1 shall be the primary goal once work begins. Non-conflicting work in Design Sequence 2 may proceed concurrently with work in Design Sequence 1, provided required design and right of way for that work is sufficiently complete, there are no impacts to the traveling public, and satisfactory progress is maintained adequately to assure completion of Design Sequence 1 within 316 working days after approval of the contract as determined by the Engineer. Materials for Design Sequence 2 shall not be ordered by the Contractor until complete design, including final plans, specifications and estimate of quantities for Design Sequence 2 has been provided to the Contractor by the Engineer or as otherwise approved by the Engineer."

In the Special Provisions, Section 10-1.01, "ORDER OF WORK," the following paragraph is added after the eleventh paragraph:

"As part of the stage construction for pipe inlets in the median, drainage units near one another will reuse grates installed in a previous stage. Attention is directed to Reuse Grate of these special provisions regarding such work."

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In the Special Provisions, Section 10-1.15, "MAINTAINING TRAFFIC," the sixth paragraph is revised as follows:

"During stage construction the 3 km culvert work area shown on the plans and related shoulder closures shall be completed from 5:00 PM Monday to 9:00 AM Friday in the same week, including installation and removal of temporary traffic stripe, as well as relocation of temporary railing. An exception will be granted for construction of reinforced concrete box culverts and related shoulder closures which shall be completed from 5:00 PM Monday to 9:00 AM Friday with one weekend inclusive. The work area allowed for reinforced concrete box culverts shall be 150 m (max) in lieu of the 3 km (max) shown on the plans. Lane closure requirements for installing and removing temporary traffic stripe and relocating temporary railing for such work are shown on lane closure chart 8."

In the Special Provisions, Section 10-1.11, "DUST CONTROL," the following paragraph is added after the second paragraph:

"Residue resulting from saw cutting concrete pavement shall be removed from the pavement surface by vacuuming or other approved method prior to becoming airborne. This residue shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications. Full compensation for furnishing all labor, materials, tools, and equipment for removal and disposal of this residue to the satisfaction of the Engineer shall be included in the contract price paid for concrete pavement and no additional compensation will be allowed therefor."

In the Special Provisions, Section 10-1.15, "MAINTAINING TRAFFIC," "Chart 4" is revised as attached.

In the Special Provisions, Section 10-1.15, "MAINTAINING TRAFFIC," "Chart 6" is revised as attached.

In the Special Provisions, Section 10-1.15, "MAINTAINING TRAFFIC," the sixth paragraph is revised as follows:

"During stage construction, the 3 km culvert work area shown on the plans and related shoulder closures shall be completed from 5:00 PM Monday to 9:00 AM Friday in the same week, including installation and removal of temporary traffic stripe, as well as relocation of temporary railing."

In the Special Provisions, Section 10-1.15, "MAINTAINING TRAFFIC," the following paragraph is added after sixth paragraph:

"An exception will be granted for construction of reinforced concrete box culverts and related shoulder closures which shall be completed from 5:00 PM Monday to 9:00 AM Friday with one weekend inclusive. The work area for reinforced concrete box culverts shall be 150 m (max) in lieu of the 3 km (max) shown on the plans. Lane closure requirements for installing and removing temporary traffic stripe and relocating temporary railing for such work are shown on lane closure chart 8."

In the Special Provisions, Section 10-1.19, "TEMPORARY PAVEMENT DELINEATION," subsection, "TEMPORARY TRAFFIC STRIPE PAINT," the third sentence is revised as follows:

"Temporary traffic stripe (paint) shall be removed when it is no longer needed as directed by the Engineer."

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In the Special Provisions, Section 10-1.23, "TEMPORARY RAILING," the seventh paragraph is revised to read as follows:

"Temporary railing (Type K) shall be anchored on the bridge deck without bridge rail as shown on the plans."

In the Special Provisions, Section 10-1.27, "EXISTING HIGHWAY FACILITIES," subsection, "REMOVE PAINTED TRAFFIC STRIPES, PAINTED PAVEMENT MARKINGS AND THERMOPLASTIC PAVEMENT MARKINGS," is revised as attached.

In the Special Provisions, Section 10-1.27, "EXISTING HIGHWAY FACILITIES," subsection, "RELOCATE CONCRETE BARRIER (TYPE K)," is revised as attached.

In the Special Provisions, Section 10-1.27, "EXISTING HIGHWAY FACILITIES," subsection, "CAP INLET," the sixth paragraph is revised as follows:

"The quantity of capping inlets will be measured and paid for as minor concrete (minor structure) as shown on the plans."

In the Special Provisions, Section 10-1.27, "EXISTING HIGHWAY FACILITIES," subsection, "CAP INLET," the seventh paragraph is revised as follows:

"The contract price paid per cubic meter for minor concrete (minor structure) for cap inlet shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in capping inlets, including removing portions of inlets, rounding bottoms of inlets, minor concrete, bar reinforcing steel, and structure excavation and structure backfill, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer."

In the Special Provisions, Section 10-1.27, "EXISTING HIGHWAY FACILITIES," subsection, "REMOVE CONCRETE," is revised as follows:

"Concrete, where shown on the plans to be removed, shall be removed.

The pay quantities of concrete to be removed will be measured and paid for by the cubic meter for remove concrete or by the square meter of surface area for remove slope paving, measured before and during removal operations.

Concrete removed may be disposed of within embankments as provided in Section 15-3.02 "Removal Methods," of the Standard Specifications. If this option for disposal is not used removed concrete shall be disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications."

In the Special Provisions, Section 10-1.27, "EXISTING HIGHWAY FACILITIES," subsection, "RELOCATE GRATE," is added as attached.

In the Special Provisions, Section 10-1.27, "EXISTING HIGHWAY FACILITIES," subsection, "RECONSTRUCT ROCK SLOPE PROTECTION," is added as attached.

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In the Special Provisions, Section 10-1.28, "CLEARING AND GRUBBING," the fourth sentence in the third paragraph is revised as follows:

"Stockpiled material shall be covered to prevent wind erosion of the material."

In the Special Provisions, Section 10-1.28, "CLEARING AND GRUBBING," the second sentence in the seventh paragraph is revised as follows:

"Within a temporary construction easement, at one location as shown on the plans a wooden shed needs to be removed as part of clearing and grubbing."

In the Special Provisions, Section 10-1.30, "EARTHWORK," paragraph eleven is revised as follows:

"Where a portion of the existing surfacing is to be removed, the outline of the area to be removed shall be cut on a neat line with a power-driven saw to a minimum depth of 50 mm or to a depth of 300 mm, or 340 mm as shown on the plans before removing the surfacing. Full compensation for cutting the existing surfacing to a depth of 50 mm shall be considered as included in the contract price paid per cubic meter for roadway excavation and no additional compensation will be allowed therefor."

In the Special Provisions, Section 10-1.42, "LIME TREATED AGGREGATES," subsection, "PAYMENT," is revised as follows:

"Full compensation for lime treating aggregate for use in the manufacture of Type A asphalt concrete, Type C asphalt concrete, asphalt treated permeable base, and open graded asphalt concrete shall be considered as included in the contract prices paid per tonne for asphalt concrete of the types involved or the contract price paid per cubic meter for asphalt treated permeable base and no separate payment will be made therefore."

In the Special Provisions, Section 10-1.43, "ASPHALT CONCRETE (TYPE C)," the first paragraph is revised as follows:

"Asphalt concrete for Asphalt Concrete (Type C) shall be Type C and shall conform to the provisions in Section 11-1, "Quality Control / Quality Assurance," of these special provisions and these special provisions. The locations of Asphalt Concrete (Type C) shall be as shown on the plans."

In the Special Provisions, Section 10-1.43, "ASPAHLT CONCRETE (TYPE C)," the second paragraph is revised as follows:

"The grade of asphalt binder to be mixed with aggregate for Type C asphalt concrete shall be PBA Grade 6a (modified) and shall conform to the following provisions."

In the Special Provisions, Section 10-1.43, "ASPAHLT CONCRETE (TYPE C)," the following two paragraphs are added after the second paragraph:

"The aggregate for Type C asphalt concrete shall conform to the grading specified in Section 39-2.02, "Aggregate," in Section 11-1, "Quality Control / Quality Assurance," of these special provisions.

The aggregate for Type C asphalt concrete shall be lime treated in conformance with the provisions in "Lime Treated Aggregates," of these special provisions."

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In the Special Provisions, Section 10-1.44, "OPEN GRADED ASPHALT CONCRETE," is revised as attached.

In the Special Provisions, Section 10-1.47, "RUMBLE STRIP (PORTLAND CEMENT CONCRETE PAVMENT) (ROLLED-IN INDENTATIONS)," the first sentence in paragraph seven is revised as follows:

"Rumble strip (Portland Cement Concrete Pavement) (Rolled-In Indentations) will be measured by the meter along the shoulder or centerline, parallel to the adjacent traffic lane, on which the rumble strip is constructed."

In the Special Provisions, Section 10-1.47, "RUMBLE STRIP (PORTLAND CEMENT CONCRETE PAVMENT) (ROLLED-IN INDENTATIONS)," paragraph eight is revised as follows:

"The contract price paid per meter for rumble strip (portland cement concrete pavement) (rolled-in indentations) shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the rumble strip (portland cement concrete pavement) (rolled-in indentations), complete in place, including removing and disposing of residue, grinding or removal and replacement of substandard rumble strip, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer."

In the Special Provisions, Section 10-1.54, "CONCRETE SURFACE TEXTURING," is revised as attached.

In the Special Provisions, Section 10-1.68, "RAILROAD CONSTRUCTION," subsection, "D. RAILROAD MATERIALS," the table following the fourth paragraph is revised as follows:

Sieve Sizes	Percentage Passing
50 mm (2")	100
25 mm (1")	90 – 100
10 mm (3/8")	50 – 84
#10	26 – 50
#40	12 – 30
#200	0 – 5

In the Special Provisions, Section 10-1.68, "RAILROAD CONSTRUCTION," subsection, "E. TRACK CONSTRUCTION" the fourteenth is revised as follows:

"The rail shall be anchored in accordance with the AREMA recommendations contained in Part 5, Track Maintenance-Section 5.4, Rail Anchor Patterns to Resist Rail Creepage."

In the Special Provisions, Section 10-1.71, "PLASTIC PIPE," the following paragraph is added after the second paragraph:

"Plastic pipe shall not be used for "Alternative Pipe" designated on the plans for pipe sizes greater than 1200 mm."

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In the Special Provisions, Section 10-1.73, "CORRUGATED STEEL PIPE," the following paragraph is added after the third paragraph:

"Pipe bedding material for corrugated steel pipe shall conform to the provisions in Section 19-3.025 "Culvert Beddings," and shall be sand bedding conforming to the provisions in Section 19-3.025 B, "Sand Bedding" of the Standard Specifications, or it shall be slurry cement backfill conforming to the provisions in Section 19-3.062, "Slurry Cement Backfill," of the Standard Specifications. Only these two types of pipe bedding are acceptable for corrugated steel pipe."

In the Special Provisions, Section 10-1.74, "EDGE DRAINS," is revised to read as follows:

"Edge drains shall conform to the provisions in Section 68-3, "Edge Drains," of the Standard Specifications."

In the Special Provisions, Section 10-1.76, "MISCELLANEOUS FACILITIES," the following paragraph is added after the first paragraph:

"Miscellaneous drainage facilities listed on the plans are various types of drainage work. Work involved includes modify drop structure (paid for as a lump sum item), modify inlet (paid for on an each basis), cap inlet (paid for as minor concrete (minor structure)), relocate grate (paid for on an each basis), manholes (paid for as minor concrete (minor structure)), junction structures (paid for as minor concrete (minor structure)), and concrete plugs (paid for as minor concrete (miscellaneous construction)). Drainage details show the necessary work."

In the Special Provisions, Section 10-1.81, "PLACE CONCRETE DIKE," is revised as follows:

"Concrete dike of the types shown on the plans shall be placed at the locations shown on the plans. Concrete dike shall be constructed monolithically with the adjacent concrete shoulder pavement.

Concrete dike will be paid for at the contract price per cubic meter of concrete pavement and also at the contract price per meter for place concrete dike of the type shown on the Engineer's Estimate.

The contract price paid per meter for place concrete dike shall include full compensation for furnishing all labor, tools, equipment, and incidentals, and for doing all the work involved in placing concrete dike, including necessary excavation, backfill, and preparation of the area, as shown on the plans, as specified in the Standard Specifications these special provisions, and as directed by the Engineer."

In the Special Provisions, Section 10-1.92, "CONCRETE BARRIER," the following paragraph is added after the fifth paragraph:

"Type 736A mod concrete barriers will be measured and paid for as concrete barrier (Type 736)."

In the Special Provisions, Section 11-1, "QUALITY CONTROL/QUALITY ASSURANCE," subsection, "39-5.03 VERIFICATION" is added as attached.

In the Proposal and Contract, the Engineer's Estimate Items 2, 65, 89, 91, 93, 118, 123, 125, 126, 130, 131, 132, 146, 153, 154, 156, 162, 170, 174, 175, 180 186, 191, 192, 197, 198, 201, 203, 205, 206, 207, 208, 209, 212, 214, 215, 220, 222, 223, 225, 226, 236, 242, 249, 252, are revised, Items 320, 321, 322, 323, 324, 325 are added and Items 145, 210, 319 are deleted as attached.

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To Proposal and Contract book holders:

Replace pages 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 18 of the Engineer's Estimate in the Proposal with the attached revised pages 3, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 18 of the Engineer's Estimate and add page 18A. The revised Engineer's Estimate is to be used in the bid.

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

Submit bids in the Proposal and Contract 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.

This office is sending this addendum by UPS overnight mail to Proposal and Contract book holders to ensure that each receives it.

If you are not a Proposal and Contract 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,

ORIGINAL SIGNED BY

REBECCA D. HARNAGEL, Chief
Office of Plans, Specifications & Estimates
Office Engineer

Attachments

2-1.017 SMALL BUSINESS AND DISABLED VETERAN BUSINESS ENTERPRISE UTILIZATION AND REPORTING

Contractors, subcontractors, suppliers and service providers who qualify are requested to apply for certification as a "Small Business" or a "Disabled Veteran Business Enterprise" by submitting an application to the Department of General Services, Office of Small Business Certification and Resources, 1531 "I" Street, Second Floor, Sacramento, CA 95814 Telephone No. (916) 322-5060, or visit their web site at <http://www.osmb.dgs.ca.gov/>.

Attention is directed to the provisions of the Small Business Procurement and Contract Act, Government Code Section 14835 et seq., and Title 2, California Code of Regulations, Section 1896 et seq. regarding certification as a Small Business, and the provisions of Military and Veterans Code Section 999 et seq. and Title 2, California Code of Regulation, Section 1896.60 et seq. regarding certification as a Disabled Veteran Business Enterprise.

By Executive Orders Nos. D-37-01 and D-43-01 the Governor has declared that the policy of the State is to promote the use and participation of Small Businesses and Disabled Veteran Business Enterprises in the State contracting process. The Executive Orders seek pursuit of an annual 25 percent Small Business participation level and the statutory 3 percent Disabled Veteran Business Enterprise participation level. Because this project involves Federal funding, the State Small Business preference and the State Disabled Veteran Business Enterprise goal do not apply. However, the Department desires to encourage the highest possible participation of Small Businesses and Disabled Veteran Business Enterprises to achieve the goals as stated in the Executive Orders.

It is requested that the Contractor provide, upon completion of the contract, a report summarizing the participation of State certified Small Businesses and Disabled Veteran Business Enterprises used in the performance of this contract. To qualify for payment, it is requested that the report include the contract number, Contractor name, business address, business telephone number, and name of person preparing the report, and that the report list payments to each Small Business or Disabled Veteran Business Enterprise by item number, description of work performed and materials provided, business name, Small Business or Disabled Veteran Business Enterprise certification number, amount of payment, date payment was made, and cumulative payment.

For submitting the report to the Engineer, the Contractor will receive \$2,500. The amount paid for submitting the report shall include full compensation for doing all the work involved in preparing and submitting the report, including accounting, tracking, maintaining, and reporting certified Small Business and Disabled Veteran Business Enterprise use.

8-1.06 ASPHALT

The first paragraph and tables following the first paragraph in Section 92-1.02, "Grades," of the Standard Specifications shall not apply. The grade of asphalt to be used will be specified in "Asphalt Concrete" of these special provisions. The safe transportation, storage, use, and disposal of the asphalt specified shall be the responsibility of the Contractor. A Certificate of Compliance, as specified in Section 92-1.03, "Test Report," of the Standard Specifications, shall accompany each shipment of asphalt to the project. When PBA Grade 6a, 6b or 7 is specified, the Certificate of Compliance shall include actual results of tests completed by the producer in addition to the items enumerated in Section 92-1.03 of the Standard Specifications. The Certificate of Compliance shall verify that the results of AASHTO Test Method T240 (Mass Loss after Rolling Thin Film Oven Test) indicate a maximum mass loss of 0.6 percent and that AASHTO Test Method T48 (Flash Point, Cleveland Open Cup) indicate a minimum flash point of 232°C. The actual formulation used by the asphalt producer shall be available to the Department upon written request. The Department will execute a non-disclosure agreement if requested by the asphalt producer.

For PBA Grades 6a (modified), if the results of mass loss after Rolling Thin Film Oven Test (AASHTO Test Method T240) or Flash Point, Cleveland Open Cup (AASHTO Test Method T48), shown on the Certificate of Compliance are not within the limits specified in the table entitled "PERFORMANCE BASED ASPHALT BINDER GRADES" or if the results are not shown on the Certificate of Compliance, the individual shipment of asphalt will be rejected. Rejected asphalt shall not be used on the project. Should rejected asphalt be unloaded into bulk storage tanks, asphalt from the tanks shall not be used on the project until tests and a Certificate of Compliance are furnished for the material and indicate compliance with the specifications.

Asphalt to be used as a binder for asphalt concrete will be sampled using the sampling device specified in Section 39-3.01C, "Asphalt Binder Storage," of the Standard Specifications. Two samples per operating day, each consisting of 2 one-liter containers, will be taken from the bulk storage tank feeder line.

For PBA Grade 6a (modified), if the test result of samples taken from the bulk storage tank, indicate mass loss greater than 0.6 percent, the material containing the paving asphalt represented by the tests shall be removed. However, if requested in writing by the Contractor and approved by the Engineer, the material containing the paving asphalt with mass loss greater than 0.6 percent may remain in place, and the Contractor shall pay to the State the amount calculated by the formulae listed below.

- For mass loss test results over 0.6 percent but less than or equal to 1.0 percent:
 1. (25 percent multiplied by 25 tonne average multiplied by the invoice price of paving asphalt)
- For mass loss test results over 1.0 percent:
 1. (100 percent multiplied by 25 tonne average multiplied by the invoice price of paving asphalt).
- The Department may deduct this amount from any moneys due, or that may become due, the Contractor under the contract. Each sample from the bulk storage shall represent 25 tonne average. The delivered price of the paving asphalt shall be based on a certified invoice provided by the Contractor.

PERFORMANCE BASED ASPHALT BINDER GRADES

Specification Designation	AASHTO Test Method	PBA Grade				
		1	4	6a (modified)	6b	7
Penetration (25°C, 100 g, 5 s), dmm RTFO Aged Residue, Min (Note1)	T49	25	20	—	—	—
Absolute Viscosity (60°C), Pa•s(x10 ⁻¹) (Note 2) Original Binder, min RTFO Aged Residue	T202 T202	800 2500-5000 (Note 3)	2800 14000 Max	2000 5000 Min	2000 5000 Min	1100 3000 Min
Kinematic Viscosity (135°C), m ² /s(x10 ⁻⁶) Original Binder, Max RTFO Aged Residue, Min	T201 T201	— 275	— 350	2000 275	2000 275	2000 275
Absolute Viscosity Ratio (60°C), Max RTFO Visc./Orig. Visc.	—	4.0	4.0	4.0	4.0	4.0
Flash Point, Cleveland Open Cup, °C, (Note 4) Original Binder, Min	T48	232	232	232	232	232
Mass Loss After RTFO Test, % (Note 5)	T240	Report (Note 6)	Report	0.60	0.60	0.60
Solubility in Trichloroethylene, % Original Binder, Min	T44	99.0	99.0	Report	Report	Report
Ductility (25°C, 5 cm/min), cm RTFO Aged Residue, Min	T51	75	50	60	60	75
On Residue from Pav @: or Residue from Tilt Oven @ 113°C for: (hours)	PP1 (Note 7)	90°C 18	100°C 36	100°C 36	100°C 36	110°C 72
SSD -115(SSV)-50.6	(Note 9)	—	—	35°C	—	25°C
Stiffness, 300 MPa, Max @: and M-value, 0.30, Min	TP1	-6°C	-6°C	-24°C	-30°C	-6°C

Notes:

1. "RTFO Aged Residue" means the asphaltic residue obtained using the Rolling Thin Film Oven Test (RTFO Test), AASHTO Test Method T240 or ASTM Designation: D 2827.
2. The Absolute Viscosity (60°C) of PBA 6a, 6b, and 7 will be determined at 1 sec-1 using ASTM Designation: D 4957 with Asphalt Institute Vacuum Capillary Viscometers.
3. Where actual limits (e.g., 2500-500) are indicated, the actual test results shall be part of the certified copy of test results, or shall be furnished with the Certificate of Compliance.
4. Actual results of the test shall be part of the certified copy of test results and when

PBA Grade 6a, 6b, or 7 is used an additional statement verifying an acceptable flash point shall be

Included with the Certificate of Compliance.

5. Actual results of the test shall be part of the certified copy of test results and when PBA Grade 6a, 6b, or 7 is used an additional statement verifying an acceptable mass loss shall be

Included with the Certificate of Compliance.

6. Where "Report" is indicated, there is no requirement; however the actual results of the test shall be part

of the certified copy of test results, or shall be furnished with the Certificate of Compliance.

7. "Tilt Oven Residue" means the asphalt obtained using California Test 374, Method B, "Method for

Determining Asphalt Durability Using the California Tilt-Oven Durability Test."

8. SSD = Shear susceptibility of Delta, SSV = Shear susceptibility of Viscosity.

9. California Test 381.

**Chart No. 4
Multilane Lane Requirements**

Location: SBd-15-67.4/113.6 KP Northbound

FROM HOUR TO HOUR	a.m.											p.m.																	
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12				
Mondays through Thursdays	1	1	1	1	1	1	1	1	1	1															1	1	1		
Fridays	1	1	1	1	1	1	1	1	1	1																	1	1	
Saturdays	1	1	1	1	1	1	1	1	1	1																1	1	1	1
Sundays	1	1	1	1	1	1	1	1	1	1																			
Day before designated legal holiday																													
Designated legal holidays																													
Day after designated legal holiday																											1	1	1

Legend:

1	One lane open in direction of travel
	No lane closure allowed

REMARKS

**Chart No. 6
Ramp Lane Requirements**

Location: SBd-15-67.4/113.6 KP Northbound Ramps (Except NB Exits at Lenwood Rd. and D Street)

FROM HOUR TO HOUR	a.m.											p.m.													
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
Mondays through Thursdays	X	X	X	X	X	X	X	X	X	X													X	X	X
Fridays	X	X	X	X	X	X	X	X	X	X														X	X
Saturdays	X	X	X	X	X	X	X	X	X	X												X	X	X	X
Sundays	X	X	X	X	X	X	X	X	X	X															
Day before designated legal holiday																									
Designated legal holidays																									

Legend:

Ramp may be closed

No work that interferes with public traffic will be allowed

REMARKS:

SBd-15 NB Ramps	STAGE	Allowable Continuous Closure
Entrance at D Street	4	10 calendar days
Entrance and Exit at E St.	4	10 calendar days
Entrance and Exit at Stoddard Wells Road	4	10 calendar days
Entrance and Exit at Dale Evans Parkway	4	30 calendar days
Entrance and Exit at Wild Wash Road	4	60 calendar days
Entrance at Hodge Road	4	30 calendar days
Exit at Hodge Road	4	60 calendar days
Entrance and Exit at Outlet Center Drive	4	30 calendar days
Entrance Loop at Lenwood Road	4	7:00AM Sunday till noon Thursday (From Feb. 15 to Mar. 5 , or From Sept. 15 to Nov.1)

REMOVE PAINTED TRAFFIC STRIPES, THERMOPLASTIC TRAFFIC STRIPES, AND PAINTED PAVEMENT MARKINGS

Painted and thermoplastic traffic stripes, and painted pavement markings to be removed shall be removed at the locations shown on the plans and at the locations designated by the Engineer. The majority of traffic stripe to be removed is painted traffic stripe, but no distinction has been made on the plans regarding the type of traffic stripe to be removed. All traffic stripe to be removed will be paid for as remove painted traffic stripe or remove yellow painted traffic stripe.

Attention is directed to "Water Pollution Control" of these special provisions.

Waste from removal of yellow thermoplastic traffic stripes, yellow painted traffic stripe and yellow painted pavement marking contains lead chromate in average concentrations greater than or equal to 5 mg/L Soluble Lead or 1000 mg/kg Total Lead. Yellow thermoplastic and yellow painted traffic stripe and pavement marking exist throughout the project limits. Residue produced from when yellow thermoplastic and yellow paint are removed may contain heavy metals in concentrations that exceed thresholds established by the California Health and Safety Code and may produce toxic fumes when heated.

The removal of yellow painted traffic stripe, yellow painted pavement marking, and yellow thermoplastic traffic stripe will be paid for as separate contract items. The removal of yellow painted traffic stripe and yellow thermoplastic traffic stripe will be measured and paid for by the meter removed. The removal of yellow painted pavement marking will be paid for by the square meter areas removed.

The contract prices paid per meter for remove yellow painted traffic stripe and remove yellow thermoplastic traffic stripe, and the contract price paid per square meter for removing yellow painted pavement marking shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing yellow painted traffic stripe, and yellow thermoplastic traffic stripe, and yellow painted pavement marking, including storage in proper containers and disposal as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The removed yellow thermoplastic and yellow paint shall be disposed of at a Class 1 disposal facility or a Class 2 disposal facility permitted by the Regional Water Quality Control Board in conformance with the requirements of the disposal facility operator within 90 days after accumulating 100 kg of residue and dust. The Contractor shall make necessary arrangements with the operator of the disposal facility to test the yellow thermoplastic and yellow paint residue as required by the facility and these special provisions. Testing shall include, at a minimum, (1) Total Lead and Chromium by EPA Method 7000 series and (2) Soluble Lead and Chromium by California Waste Extraction Test. From the first 3360 L of waste or portion thereof, if less than 3360 L of waste are produced, a minimum of four randomly selected samples shall be taken and analyzed. From each additional 840 L of waste or portion thereof, if less than 840 L are produced, a minimum of one additional random sample shall be taken and analyzed. The Contractor shall submit the name and location of the disposal facility and analytical laboratory along with the testing requirements to the Engineer not less than 5 days prior to the start of removal of yellow thermoplastic and yellow painted traffic stripe and pavement marking. The analytical laboratory shall be certified by the Department of Health Services Environmental Laboratory Accreditation Program. Test results shall be provided to the Engineer for review prior to signing a waste profile as requested by the disposal facility, prior to issuing an EPA identification number, and prior to allowing removal of the waste from the site.

The Contractor shall prepare a project specific Lead Compliance Plan to prevent or minimize worker exposure to lead while handling removed yellow thermoplastic and yellow paint residue. Attention is directed to Title 8, California Code of Regulations, Section 1532.1, "Lead," for specific Cal-OSHA requirements when working with lead.

The Lead Compliance Plan shall contain the elements listed in Title 8, California Code of Regulations, Section 1532.1(e)(2)(B). Before submission to the Engineer, the Lead Compliance Plan shall be approved by an Industrial Hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene. The Plan shall be submitted to the Engineer at least 7 days prior to beginning removal of yellow thermoplastic and yellow paint.

Prior to removing yellow thermoplastic and yellow painted traffic stripe and yellow painted pavement marking, personnel who have no prior training, including State personnel, shall complete a safety training program provided by the Contractor that meets the requirements of Title 8, California Code of Regulations, Section 1532.1, "Lead," and the Contractor's Lead Compliance Program.

Personal protective equipment, training, and washing facilities required by the Contractor's Lead Compliance Plan shall be supplied to State personnel by the Contractor. The number of State personnel will be 2.

Where grinding or other methods approved by the Engineer are used to remove yellow thermoplastic, yellow painted traffic stripe and yellow painted or yellow thermoplastic pavement marking, the removed residue, including dust, shall be contained and collected immediately. Sweeping equipment shall not be used. Collection shall be by a high efficiency particulate air (HEPA) filter equipped vacuum attachment operated concurrently with the removal operations or other equally effective methods approved by the Engineer. The Contractor shall submit a written work plan for the removal, storage, and disposal of yellow thermoplastic and yellow painted traffic stripe and pavement marking to the Engineer for approval not less than 15 days prior to the start of the removal operations. Removal operations shall not be started until the Engineer has approved the work plan.

The removed yellow thermoplastic traffic stripe and yellow painted traffic stripe and pavement marking residue shall be stored and labeled in covered containers. Labels shall conform to the provisions of Title 22, California Code of Regulations, Sections 66262.31 and 66262.32. Labels shall be marked with date when the waste is generated, the words "Hazardous Waste", composition and physical state of the waste (for example, asphalt grindings with thermoplastic or paint), the word "Toxic", the name and address of the Engineer, the Engineer's telephone number, contract number, and Contractor or subcontractor. The containers shall be a type approved by the United States Department of Transportation for the transportation and temporary storage of the removed residue. The containers shall be handled so that no spillage will occur. The containers shall be stored in a secured enclosure at a location within the project limits until disposal, as approved by the Engineer.

If the yellow thermoplastic traffic stripe, yellow painted traffic stripe, and yellow painted pavement marking residue is transported to a Class 1 disposal facility, a manifest shall be used, and the transporter shall be registered with the California Department of Toxic Substance Control. The Engineer will obtain the United States Environmental Protection Agency Identification Number and sign all manifests as the generator within 2 working days of receiving sample test results and approving the test methods.

The Contractor shall assume that the yellow paint removed is not regulated under the Federal Resource Conservation and Recovery Act (RCRA). Additional disposal costs for removal residue regulated under RCRA, as determined by test results required by the disposal facility, will be paid for as extra work as provided in Section 4-1.03D, "Extra Work," of the Standard Specifications.

Nothing in these special provisions shall relieve the Contractor of the Contractor's responsibilities as specified in Section 7-1.09, "Public Safety," of the Standard Specifications.

Attention is directed to "Material Containing Aerially Deposited Lead" of these special provisions regarding payment for the Lead Compliance Plan.

Full compensation for providing a written work plan for the removal, storage, and disposal of yellow thermoplastic traffic stripe, yellow painted traffic stripe and yellow painted and yellow thermoplastic pavement marking shall be considered as included in the contract items paid per meter for remove yellow thermoplastic traffic stripe and remove yellow painted traffic stripe or per square meter for remove yellow thermoplastic pavement marking and per square meter for remove yellow painted pavement marking and no separate payment will be made therefor.

RELOCATE CONCRETE BARRIER (TYPE K)

Existing concrete barrier (Type K) at locations shown on the plans shall be removed and relocated to the new locations shown on the plans. Once in place at these locations concrete barrier (Type K) shall be pinned and anchored in position as shown on the plans using galvanized pins and anchors.

Damaged sections of existing concrete barrier (Type K) as determined by the Engineer shall be removed and disposed of outside the highway right of way in conformance with the provisions in Section 7-1.13 of the Standard Specifications and replaced by the Contractor. Replace concrete barrier (Type K) will be measured by the meter replaced. See the compensation clauses for replacement of concrete barrier (Type K) within this special provision.

Connector loops and bolts at the ends of existing or replacement concrete barrier (Type K) shall be cleaned of loose rust. After cleaning the loops and bolts, they shall have organic zinc primer brushed on all exposed surfaces of the loops and bolts prior to relocation or placement. The organic zinc rich primer shall comply in all respects with DOD-P-15328D, Primer (Wash) Pre-treatment (formula No. 117 for metals).

RELOCATE GRATE

During stage construction for pipe inlets in the median, existing grates shall be relocated at a nearby drainage unit as shown on the plans. Such work shall be in conformance with the provisions in Section 15, "Existing Highway Facilities," of the Standard Specifications and these special provisions.

To illustrate reuse of grates during stage construction: In Sequence 1 work unit "a", a pipe inlet will have a checkered steel plate installed. Unit "b", another pipe inlet will have a frame and grate installed. In Sequence 2 work unit "b" will have its frame and grate removed for reuse. Unit "a" will have its checkered plate removed and disposed and have the unit "b" frame and grate installed.

The Engineer will provide details regarding proper locations for all grates to be reused if such locations are not adequately shown on the plans.

Relocate grate will be measured by the unit at the drainage system.

The contract unit price paid for relocate grate shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in removing frame and grate, storing frame and grate and installing frame and grate at the new pipe inlet location, as well as removing and disposing of checkered steel plate at that work location, as specified in the Standard Specifications and these special provisions and as directed by the Engineer.

RECONSTRUCT ROCK SLOPE PROTECTION

Existing rock slope protection shall be removed and reconstructed at a nearby location as shown on the plans. Such work shall be in conformance with the provisions in Section 72, "Slope Protection," of the Standard Specifications and these special provisions.

Rock slope protection to be removed is concrete rock slope protection. Concrete rock slope protection removed shall be broken up so that the maximum size of removed material to be used at the new location shall be 0.3 m in any dimension.

Reconstruct rock slope protection will be measured and paid for by the cubic meter in the same manner as is stated for rock slope protection in Section 72-2.04 "Measurement "and Section 72-2.05 "Payment" of the Standard Specifications.

Full compensation for removing existing concrete rock slope protection shall be considered as included in the contract price paid per cubic meter for reconstruct rock slope protection and no additional compensation will be allowed therefor.

At the new location rock slope protection fabric shall be placed beneath the rock slope protection as shown on the plans.

Rock slope protection fabric will be measured and paid for by the square meter as stated for rock slope protection fabric in Section 72-2.04 "Measurement " and Section 72-2.05 "Payment" of the Standard Specifications.

10-1.44 OPEN GRADED ASPHALT CONCRETE

Open graded asphalt concrete shall conform to the provisions in Section 39, "Asphalt Concrete," of the Standard Specifications and these special provisions. Section 11-1, "Quality Control / Quality Assurance," of these special provisions shall not apply to open graded asphalt concrete.

The grade of asphalt binder to be mixed with aggregate for open graded asphalt concrete shall be PBA Grade 6a (modified) and shall conform to the provisions in "Asphalt" in Section 8, "Materials," of these special provisions.

The aggregate for open graded asphalt concrete shall conform to the 9.5-mm Maximum grading specified in Section 39-2.02, "Aggregate," of the Standard Specifications.

Open graded asphalt concrete may be placed when the atmospheric temperature is below 20°C, but above 13°C, provided the following requirements are met:

- A. The aggregate grading shall be 9.5-mm maximum.
- B. Open graded asphalt concrete shall not be placed in a windrow or stockpile. Open graded asphalt concrete shall be transferred directly from the hauling vehicle to the asphalt paver hopper.
- C. Open graded asphalt concrete shall be not less than 19 mm in compacted thickness.
- D. Immediately prior to adding the asphalt binder to the open graded asphalt concrete mixture, the temperature of the aggregate shall be not more than 163°C. Open graded asphalt concrete shall be spread at a temperature of not less than 125°C measured in the hopper in the asphalt paver.
- E. The compaction operation shall be such that the maximum distance between the asphalt paver and the initial breakdown rolling shall be no greater than 15 m.
- F. During the placement of open graded asphalt concrete, the speed of the asphalt paver shall not exceed 10 m per minute.
- G. The Contractor shall cover loads of open graded asphalt concrete with tarpaulins. The tarpaulins shall completely cover exposed open graded asphalt concrete in the hauling vehicle until the open graded asphalt concrete has been completely transferred into the asphalt paver hopper.

The miscellaneous areas to be paid for at the contract price per square meter for place asphalt concrete (miscellaneous area), in addition to the prices paid for the materials involved, shall be limited to the areas listed on the plans.

Aggregate for asphalt concrete dikes shall be in conformance with the provisions for 9.5-mm Maximum grading in Section 39-2.02, "Aggregate," of the Standard Specifications.

If the Contractor selects the batch mixing method, asphalt concrete shall be produced by the automatic batch mixing method in conformance with the provisions in Section 39-3.03A(2), "Automatic Proportioning," of the Standard Specifications.

If the finished surface of the asphalt concrete on ramp traffic lanes does not meet the specified surface tolerances, the surfacing shall be brought within tolerance by either (1) abrasive grinding (with fog seal coat on the areas which have been ground), (2) removal and replacement or (3) placing an overlay of asphalt concrete. The method will be selected by the Engineer. The corrective work shall be at the Contractor's expense.

If abrasive grinding is used to bring the finished surface to the specified surface tolerances, additional grinding shall be performed, as necessary, to extend the area ground in each lateral direction so that the lateral limits of grinding are at a constant offset from, and parallel to, the nearest lane line or pavement edge, and in each longitudinal direction so that the grinding begins and ends at lines normal to the pavement centerline, within any ground area. Ground areas shall be neat rectangular areas of uniform surface appearance. Abrasive grinding shall conform to the provisions in the first paragraph and the last 4 paragraphs in Section 42-2.02, "Construction," of the Standard Specifications.

10-1.54 CONCRETE SURFACE TEXTURE

Concrete surface texture for concrete surfaces shall conform to the details shown on the plans and the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

Concrete surface textures listed below are required at concrete surfaces for retaining walls as shown on the plans:

- A. Rib texture
- B. Splitface running bond block texture
- C. Aesthetic graphic texture

The rib texture shall be a concrete surface texture simulating the appearance of straight ribs of concrete. Grooves between ribs shall be continuous with no apparent curves or discontinuities. The concrete surface texture shall have random shadow patterns. The concrete surface texture shall not have secondary patterns imparted by shadows or repetitive fractured surfaces. This concrete surface texture shall be applied to retaining walls as shown on the plans.

The splitface running bond block texture shall be a concrete surface texture simulating the pattern and texture of a splitface concrete masonry unit wall in a running bond pattern. The splitface running bond block pattern shall be placed on retaining walls supporting sound walls. In cut sections the splitface running bond block pattern shall be placed on the retaining wall side that is facing traffic, as shown on the plans. In fill sections the splitface running bond block pattern shall be placed on the side away from traffic, as shown on the plans.

The splitface running bond block texture shall consist of full courses and shall be continuous between forms. A partial course may occur only when needed as the bottom course. Simulated mortar joints shall be flush, and both horizontal and vertical joints perpendicular to one another shall be aligned plumb with each other. The splitface texture shall be random and not have secondary patterns imparted by shadows or repetitive split face surfaces. The concrete surface texture shall not exceed 19 mm relief. The concrete surface texture areas shall be sharp and crisp with out easing or rounding.

The aesthetic graphic texture shall simulate a formed relief constructed to the dimensions and shapes shown on the plans. Corners at the intersection of plane surfaces shall be sharp and crisp without easing or rounding. Surface finishes as shown on the plans shall be applied to the aesthetic graphic concrete surface texture.

TEST PANEL

A test panel at least 2.0 m x 2.0 m in size shall be successfully completed at a location approved by the Engineer before beginning work on concrete surface textures. The test panels shall be representative of each of the various concrete surface textures (rib texture, splitface running bond block texture, and the aesthetic graphic texture) as shown on the plans. Each test panel shall be constructed and finished with the materials, tools, equipment and methods to be used in constructing the architectural concrete surface textures. If ordered by the Engineer, additional test panels shall be constructed and finished until the specified finish, texture and color are obtained, as determined by the Engineer.

The test panel approved by the Engineer shall be used as the standard of comparison in determining acceptability of the various concrete surface textures to be applied to retaining walls.

FORM LINERS

Form liners shall be used for textured concrete surfaces and shall be installed in conformance with the manufacturer's recommendations, unless other methods of forming textured concrete surfaces are approved by the Engineer. Form liners shall be manufactured from an elastomeric material or a semi-elastomeric polyurethane material by a manufacturer of commercially available concrete form liners. No substitution of other types of formliner material will be allowed. Form liners shall leave crisp, sharp definition of the concrete surface texture. Recurring textural configurations exhibited by repeating, recognizable shadow patterns shall be prevented by proper casting of form liner patterns. Textured concrete surfaces with such recurring textural configurations shall be reworked to remove such patterns as approved by the Engineer or the concrete shall be replaced.

Form liners shall have the following properties:

Description	ASTM Designation:	Range
Elastomeric material	D 2240	20 to 65
Shore A hardness	D 412	0.9 to 6.2
Tensile strength (MPa)		
Semi-elastomeric polyurethane	D 2240	55 to 65
Shore D hardness	D 2370	18 minimum
Tensile strength (MPa)		

Cuts and tears in form liners shall be sealed and repaired in conformance with the manufacturer's recommendations. Form liners that are delaminated from the form shall not be used. Form liners with deformations to the manufactured surface caused by improper storage practices or any other reason shall not be used.

Form liners shall extend the full length of texturing with transverse joints at 2.5 m minimum spacing. Small pieces of form liners shall not be used. Grooves shall be aligned straight and true. Grooves shall match at joints between form liners. Joints in the direction of grooves in grooved patterns shall be located only in the depressed portion of the textured concrete. Adjoining liners shall be butted together without distortion, open cracks or offsets at the joints. Joints between liners shall be cleaned before each use to remove any mortar in the joint.

Adhesives shall be compatible with the form liner material and with concrete. Adhesives shall be approved by the liner manufacturer. Adhesives shall not cause swelling of the liner material.

RELEASING FORM LINERS

Products and application procedures for form release agents shall be approved by the form liner manufacturer. Release agents shall not cause swelling of the liner material or delamination from the forms. Release agents shall not stain the concrete or react with the liner material. For reliefs simulating fractured concrete or wood grain surfaces the application method shall include the scrubbing method using a natural bristle scrub brush in the direction of grooves or grain. The release agent shall coat the liner with a thin film. Following application of form release agent, the liner surfaces shall be cleaned of excess amounts of agent using compressed air. Buildup of form release agent caused by the reuse of a liner shall be removed at least every 5 uses.

Form liners shall release without leaving particles or pieces of liner material on the concrete and without pulling or breaking concrete from the textured surface. The concrete surfaces exposed by removing forms shall be protected from damage.

CURING

Concrete surfaces with concrete surface texture shall be cured only by the forms-in-place or water methods. Seals and curing compounds shall not be used.

PREPARE AND STAIN CONCRETE

This work shall consist of preparing and staining the concrete surface texture and other concrete surfaces which are designated on the plans to be stained. After application of the concrete surface textures has been completed, the surfaces of concrete to be stained shall be prepared by a light abrasive blasting of the surface as necessary to remove any remaining form oil or other contaminants. The concrete surface shall be thoroughly dry at the time the stain is applied.

The stain for concrete surface texture shall be of the Vinyl-Chloride Co-Polymer Resin Base Type which has been commercially manufactured for use as an exterior concrete stain. The stain shall be formulated and applied so that the color of the stained concrete surface texture closely matched the color of the sound wall. The stain shall be applied in not less than 2 coats at a rate necessary to produce a uniform color. Each coat shall be thoroughly cured before the succeeding coat is applied. Areas not to be stained shall be protected so that they remain stain free.

ANTI GRAFFITI PROTECTIVE COATING

All concrete surface textures applied shall have anti graffiti protective coating applied after curing. Such surfaces shall have cured a minimum of 28 days and shall be clean and dry prior to application of the protective coating. The protective coating shall be sprayed in accordance with the manufacturer's instructions.

The anti graffiti protective coating shall be a clear color water based cross-linked co-polymer type sacrificial type, easily washed with hot water, used to prevent graffiti from penetrating the concrete surface texture. Chemical solids shall not exceed 27 percent of the total coating volume. The coating shall be a non-flammable, clear when dry, emulsion. Anti graffiti protective coating shall be applied in a minimum of three (3) even coats on such surfaces. Each coat shall be thoroughly dry before application of the next coat.

MEASUREMENT AND PAYMENT

Concrete surface texture will be measured and paid for by the square meter.

The contract price paid per square meter for concrete surface texture shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in concrete surface texture, complete in place, including test panels, staining of concrete, as well as furnishing and applying anti graffiti protective coating, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

39-5.03 VERIFICATION

The Engineer will determine the acceptability of the quality control test results by using the t -test for sample means to test whether or not the means of the quality control test results and verification test results are within an allowable testing difference. Quality control test results and verification test results for each indexed quality characteristic will be used in the verification process.

The t -value of the group of test data to be verified is computed as follows:

$$t = \frac{|\bar{X}_c - \bar{X}_v|}{S_p \sqrt{\frac{1}{n_c} + \frac{1}{n_v}}} \quad \text{and} \quad S_p^2 = \frac{S_c^2(n_c - 1) + S_v^2(n_v - 1)}{n_c + n_v - 2}$$

where:

- n_c = Number of Contractor's quality control tests (minimum of 2 required)
- n_v = Number of Verification tests (minimum of 1 required)
- \bar{X}_c = Mean of the Contractor's quality control tests
- \bar{X}_v = Mean of the Verification tests
- S_p = Pooled standard deviation
(When $n_v = 1$, $S_p = S_c$)
- S_c = Standard deviation of the Contractor's quality control tests
- S_v = Standard deviation of the Verification tests (when $n_v > 1$)

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
1	070012	PROGRESS SCHEDULE (CRITICAL PATH METHOD)	LS	LUMP SUM	LUMP SUM	
2	022986	TEMPORARY TORTOISE FENCE	M	600		
3	071322	TEMPORARY FENCE (TYPE CL-1.8)	M	2230		
4	074019	PREPARE STORM WATER POLLUTION PREVENTION PLAN	LS	LUMP SUM	LUMP SUM	
5	074020	WATER POLLUTION CONTROL	LS	LUMP SUM	LUMP SUM	
6 (S)	022987	CONSTRUCTION AREA SIGN (1-POST)	EA	430		
7 (S)	022988	CONSTRUCTION AREA SIGN (2-POST)	EA	100		
8 (S)	120100	TRAFFIC CONTROL SYSTEM	LS	LUMP SUM	LUMP SUM	
9 (S)	120120	TYPE III BARRICADE	EA	320		
10 (S)	120149	TEMPORARY PAVEMENT MARKING (PAINT)	M2	79		
11 (S)	120151	TEMPORARY TRAFFIC STRIPE (TAPE)	M	45 000		
12 (S)	120159	TEMPORARY TRAFFIC STRIPE (PAINT)	M	296 000		
13 (S)	120165	CHANNELIZER (SURFACE MOUNTED)	EA	4500		
14 (S)	120166	CHANNELIZER (SURFACE MOUNTED) (LEFT IN PLACE)	EA	800		
15 (S)	120200	FLASHING BEACON (PORTABLE)	EA	7		
16 (S)	120300	TEMPORARY PAVEMENT MARKER	EA	69 200		
17 (S)	128650	PORTABLE CHANGEABLE MESSAGE SIGN	EA	9		
18 (S)	129000	TEMPORARY RAILING (TYPE K)	M	134 000		
19 (S)	129100	TEMPORARY CRASH CUSHION MODULE	EA	450		
20 (S)	129150	TEMPORARY TRAFFIC SCREEN	M	169 000		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61 (S)	022995	COLD PLANE LEAN CONCRETE BASE (30 MM, MAXIMUM)	M2	26 200		
62	022996	SAWCUT ASPHALT CONCRETE (300 MM DEEP)	M	64 000		
63	022997	SAWCUT ASPHALT CONCRETE (340 MM DEPTH)	M	3700		
64	022998	REPLACE CONCRETE BARRIER (TYPE K)	M	2170		
65	153210	REMOVE CONCRETE	M3	850		
66	153215	REMOVE CONCRETE (CURB AND GUTTER)	M	50		
67	153216	REMOVE CONCRETE CURB AND SIDEWALK	M3	100		
68	153225	PREPARE CONCRETE BRIDGE DECK SURFACE	M2	200		
69	153250	REMOVE SOUND WALL	M2	2		
70	022999	REMOVE BRIDGE APPROACH RAILING	EA	16		
71	023000	RAILROAD TRACK REMOVAL	M	1390		
72	023001	GRADE CROSSING REMOVAL	M	160		
73	157550	BRIDGE REMOVAL	LS	LUMP SUM	LUMP SUM	
74	157561	BRIDGE REMOVAL (PORTION), LOCATION A	LS	LUMP SUM	LUMP SUM	
75	157562	BRIDGE REMOVAL (PORTION), LOCATION B	LS	LUMP SUM	LUMP SUM	
76	157563	BRIDGE REMOVAL (PORTION), LOCATION C	LS	LUMP SUM	LUMP SUM	
77	157564	BRIDGE REMOVAL (PORTION), LOCATION D	LS	LUMP SUM	LUMP SUM	
78	157565	BRIDGE REMOVAL (PORTION), LOCATION E	LS	LUMP SUM	LUMP SUM	
79	023002	600 MM PLASTIC PIPE LINER	M	240		
80	023003	900 MM PLASTIC PIPE LINER	M	400		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
81	023004	1200 MM PLASTIC PIPE LINER	M	500		
82	160101	CLEARING AND GRUBBING	LS	LUMP SUM	LUMP SUM	
83	170101	DEVELOP WATER SUPPLY	LS	LUMP SUM	LUMP SUM	
84	190101	ROADWAY EXCAVATION	M3	1 310 000		
85	190103	ROADWAY EXCAVATION (TYPE Y) (AERIALY DEPOSITED LEAD)	M3	234 000		
86	190110	LEAD COMPLIANCE PLAN	LS	LUMP SUM	LUMP SUM	
87	190185	SHOULDER BACKING	M3	55 000		
88 (F)	192003	STRUCTURE EXCAVATION (BRIDGE)	M3	7140		
89	192037	STRUCTURE EXCAVATION (RETAINING WALL)	M3	14 400		
90 (F)	193003	STRUCTURE BACKFILL (BRIDGE)	M3	4460		
91	193013	STRUCTURE BACKFILL (RETAINING WALL)	M3	10 700		
92 (F)	193030	PERVIOUS BACKFILL MATERIAL	M3	190		
93	193031	PERVIOUS BACKFILL MATERIAL (RETAINING WALL)	M3	680		
94	193114	SAND BACKFILL	M3	1060		
95 (S)	200001	HIGHWAY PLANTING	LS	LUMP SUM	LUMP SUM	
96	200002	ROADSIDE CLEARING	LS	LUMP SUM	LUMP SUM	
97 (S)	023005	ROCK GRAVEL (TYPE 1)	M2	18 800		
98 (S)	202007	DUFF	HA	130		
99 (S)	203003	STRAW (EROSION CONTROL)	TONN	9		
100 (S)	203014	FIBER (EROSION CONTROL)	KG	2670		

ENGINEER'S ESTIMATE
08-3555U4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
101 (S)	203024	COMPOST (EROSION CONTROL)	KG	10 000		
102 (S)	203045	PURE LIVE SEED (EROSION CONTROL)	KG	67		
103 (S)	203061	STABILIZING EMULSION (EROSION CONTROL)	KG	1340		
104 (S)	203561	JUTE MESH	M2	22 200		
105 (S)	023006	TRANSPLANT JOSHUA TREE	EA	16		
106 (S)	023007	TRANSPLANT YUCCA PLANT	EA	21		
107 (S)	204098	MAINTAIN EXISTING PLANTS	LS	LUMP SUM	LUMP SUM	
108 (S)	204099	PLANT ESTABLISHMENT WORK	LS	LUMP SUM	LUMP SUM	
109 (S)	208000	IRRIGATION SYSTEM	LS	LUMP SUM	LUMP SUM	
110 (S)	208742	200 MM CORRUGATED STEEL PIPE CONDUIT (1.63 MM THICK)	M	210		
111 (S)	208800	300 MM WELDED STEEL PIPE CONDUIT (6.35 MM THICK)	M	60		
112	250201	CLASS 2 AGGREGATE SUBBASE	M3	164 000		
113	260201	CLASS 2 AGGREGATE BASE	M3	85 100		
114	260210	AGGREGATE BASE (APPROACH SLAB)	M3	57		
115	280000	LEAN CONCRETE BASE	M3	118 000		
116	290211	ASPHALT TREATED PERMEABLE BASE	M3	520		
117	023008	ASPHALT CONCRETE (TYPE A, BOND BREAKER)	TONN	62 800		
118	023009	ASPHALT CONCRETE (TYPE C)	TONN	38 400		
119	390152	ASPHALT CONCRETE	TONN	256 000		
120	390165	ASPHALT CONCRETE (OPEN GRADED)	TONN	12 700		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
121	391004	PAVING ASPHALT (PAINT BINDER)	TONN	1890		
122	393001	PAVEMENT REINFORCING FABRIC	M2	950		
123	394002	PLACE ASPHALT CONCRETE (MISCELLANEOUS AREA)	M2	41 000		
124	394044	PLACE ASPHALT CONCRETE DIKE (TYPE C)	M	130		
125	394046	PLACE ASPHALT CONCRETE DIKE (TYPE D)	M	3250		
126	394048	PLACE ASPHALT CONCRETE DIKE (TYPE E)	M	3680		
127	394049	PLACE ASPHALT CONCRETE DIKE (TYPE F)	M	330		
128	394050	RUMBLE STRIP	M	66 900		
129	401000	CONCRETE PAVEMENT	M3	268 000		
130	023010	PLACE CONCRETE DIKE (TYPE C MODIFIED)	M	190		
131	023011	PLACE CONCRETE DIKE (TYPE D MODIFIED)	M	7000		
132	023012	PLACE CONCRETE DIKE (TYPE F MODIFIED)	M	140		
133	023013	RUMBLE STRIP (PORTLAND CEMENT CONCRETE PAVEMENT) (ROLLED-IN INDENTATIONS)	M	71 800		
134	404092	SEAL PAVEMENT JOINT	M	364 000		
135	490505	FURNISH STEEL PILING (HP 250 X 62)	M	1525		
136 (S)	490506	DRIVE STEEL PILE (HP 250 X 62)	EA	178		
137	490511	FURNISH STEEL PILING (HP 250 X 85)	M	230		
138 (S)	490512	DRIVE STEEL PILE (HP 250 X 85)	EA	35		
139 (S)	490655	400 MM CAST-IN-DRILLED-HOLE CONCRETE PILING	M	3478		
140 (S)	498026	350 MM CAST-IN-DRILLED-HOLE CONCRETE PILING (SOUND WALL)	M	230		

ENGINEER'S ESTIMATE
08-3555U4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
141 (S)	498027	400 MM CAST-IN-DRILLED-HOLE CONCRETE PILING (SOUND WALL)	M	74		
142 (S)	500001	PRESTRESSING CAST-IN-PLACE CONCRETE	LS	LUMP SUM	LUMP SUM	
143 (F)	510051	STRUCTURAL CONCRETE, BRIDGE FOOTING	M3	1550		
144 (F)	510053	STRUCTURAL CONCRETE, BRIDGE	M3	4950		
145	BLANK					
146	510060	STRUCTURAL CONCRETE, RETAINING WALL	M3	5160		
147 (F)	510086	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	M3	570		
148 (F)	510087	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE R)	M3	520		
149 (F)	048861	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE EQ MODIFIED)	M3	36		
150 (F)	048862	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE R MODIFIED)	M3	41		
151	510129	CLASS 2 CONCRETE (BOX CULVERT)	M3	840		
152	510130	CLASS 2 CONCRETE (CHANNEL LINING)	M3	940		
153	510135	CLASS 2 CONCRETE (HEADWALL)	M3	220		
154	510502	MINOR CONCRETE (MINOR STRUCTURE)	M3	170		
155	510800	PAVING NOTCH EXTENSION	M3	15		
156	511055	CONCRETE SURFACE TEXTURE	M2	3850		
157	511106	DRILL AND BOND DOWEL	M	2770		
158	048863	DRILLED HOLE (16 MM)	M	140		
159	511118	CLEAN EXPANSION JOINT	M	360		
160	515041	FURNISH POLYESTER CONCRETE OVERLAY	M3	11		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
161	515042	PLACE POLYESTER CONCRETE OVERLAY	M2	200		
162 (S)	517961	SOUND WALL (BARRIER) (MASONRY BLOCK)	M2	3360		
163 (S)	518002	SOUND WALL (MASONRY BLOCK)	M2	940		
164 (S)	518051	PTFE SPHERICAL BEARING	EA	8		
165 (S)	048864	JOINT SEAL (TYPE A - MR 30 MM)	M	620		
166 (S)	519120	JOINT SEAL (MR 15 MM)	M	100		
167 (S)	519142	JOINT SEAL (MR 40 MM)	M	9		
168 (S)	520101	BAR REINFORCING STEEL	KG	176 000		
169 (S-F)	520102	BAR REINFORCING STEEL (BRIDGE)	KG	1 006 600		
170 (S)	520103	BAR REINFORCING STEEL (RETAINING WALL)	KG	292 000		
171 (S-F)	540104	WATERPROOFING AND COVER	M2	510		
172 (F)	550203	FURNISH STRUCTURAL STEEL (BRIDGE)	KG	520 700		
173 (S-F)	550204	ERECT STRUCTURAL STEEL (BRIDGE)	KG	520 700		
174	023014	FURNISH CMS SIGN STRUCTURE	KG	15 700		
175 (S)	023015	INSTALL CMS SIGN STRUCTURE	KG	15 700		
176	560218	FURNISH SIGN STRUCTURE (TRUSS)	KG	123 000		
177 (S)	560219	INSTALL SIGN STRUCTURE (TRUSS)	KG	123 000		
178 (S)	561008	760 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	64		
179 (S)	561009	920 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	110		
180 (S)	561012	1220 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	6		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
181	566011	ROADSIDE SIGN - ONE POST	EA	66		
182	566012	ROADSIDE SIGN - TWO POST	EA	9		
183	568007	INSTALL SIGN OVERLAY	M2	2		
184 (S)	590115	CLEAN AND PAINT STRUCTURAL STEEL	LS	LUMP SUM	LUMP SUM	
185 (S)	600101	RAILROAD BALLAST	M3	3620		
186 (S)	023016	RAILROAD SUBBALLAST	M3	5000		
187	023017	RAILROAD APPROACH RAILING (TYPE I)	M	62		
188	023018	RAILROAD APPROACH RAILING (TYPE II)	M	55		
189 (S)	023019	WOOD PLANK GRADE CROSSING	M	220		
190 (S)	601001	RAILROAD TRACK	M	1390		
191	620908	375 MM ALTERNATIVE PIPE CULVERT	M	400		
192	620909	450 MM ALTERNATIVE PIPE CULVERT	M	770		
193	620913	600 MM ALTERNATIVE PIPE CULVERT	M	620		
194	620919	750 MM ALTERNATIVE PIPE CULVERT	M	510		
195	620924	900 MM ALTERNATIVE PIPE CULVERT	M	1210		
196	620930	1050 MM ALTERNATIVE PIPE CULVERT	M	1100		
197	620933	1200 MM ALTERNATIVE PIPE CULVERT	M	4950		
198	620938	1350 MM ALTERNATIVE PIPE CULVERT	M	100		
199	620943	1650 MM ALTERNATIVE PIPE CULVERT	M	140		
200	620947	1950 MM ALTERNATIVE PIPE CULVERT	M	160		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
201	650069	450 MM REINFORCED CONCRETE PIPE	M	95		
202	650075	600 MM REINFORCED CONCRETE PIPE	M	70		
203	650077	750 MM REINFORCED CONCRETE PIPE	M	60		
204	650079	900 MM REINFORCED CONCRETE PIPE	M	78		
205	650081	1050 MM REINFORCED CONCRETE PIPE	M	120		
206	650084	1200 MM REINFORCED CONCRETE PIPE	M	140		
207	650086	1350 MM REINFORCED CONCRETE PIPE	M	510		
208	681134	80 MM PLASTIC PIPE (EDGE DRAIN)	M	1200		
209	681137	80 MM PLASTIC PIPE (EDGE DRAIN OUTLET)	M	360		
210	BLANK					
211	703233	GRATED LINE DRAIN	M	53		
212	703267	300 MM CORRUGATED STEEL PIPE RISER (1.63 MM THICK)	M	85		
213	703283	900 MM CORRUGATED STEEL PIPE RISER (2.01 MM THICK)	M	180		
214	705043	375 MM STEEL FLARED END SECTION	EA	17		
215	705044	450 MM STEEL FLARED END SECTION	EA	25		
216	705045	600 MM STEEL FLARED END SECTION	EA	31		
217	721008	ROCK SLOPE PROTECTION (LIGHT, METHOD B)	M3	650		
218	721009	ROCK SLOPE PROTECTION (FACING, METHOD B)	M3	1290		
219	721010	ROCK SLOPE PROTECTION (BACKING NO. 1, METHOD B)	M3	1020		
220	721023	ROCK SLOPE PROTECTION (1/2T, METHOD B)	M3	1780		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
221	721024	ROCK SLOPE PROTECTION (1/4T, METHOD B)	M3	340		
222	721810	SLOPE PAVING (CONCRETE)	M3	47		
223	729010	ROCK SLOPE PROTECTION FABRIC	M2	11 100		
224	731502	MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	M3	100		
225	731517	MINOR CONCRETE (GUTTER)	M	700		
226 (S)	750001	MISCELLANEOUS IRON AND STEEL	KG	30 000		
227 (S-F)	750496	MISCELLANEOUS METAL (RESTRAINER - PIPE TYPE)	KG	1440		
228 (S-F)	750501	MISCELLANEOUS METAL (BRIDGE)	KG	1960		
229 (S)	800007	FENCE (TYPE BW, 5 STRAND, METAL POST)	M	40 700		
230 (S)	800051	FENCE (TYPE WM, METAL POST)	M	5200		
231 (S)	800391	CHAIN LINK FENCE (TYPE CL-1.8)	M	5010		
232 (S)	802585	1.2 M CHAIN LINK GATE (TYPE CL-1.8)	EA	1		
233 (S)	802596	3.7 M CHAIN LINK GATE (TYPE CL-1.8)	EA	2		
234	820107	DELINEATOR (CLASS 1)	EA	400		
235 (S)	832003	METAL BEAM GUARD RAILING (WOOD POST)	M	1520		
236 (S)	048865	CORRUGATED METAL GUARD RAILING	M	150		
237	833080	CONCRETE BARRIER (TYPE K)	M	5140		
238	833081	CONCRETE BARRIER (TYPE K MODIFIED)	M	86		
239 (F)	833125	CONCRETE BARRIER (TYPE 25)	M	78		
240	833161	CONCRETE BARRIER (TYPE 27A)	M	20		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
241 (S)	839312	DOUBLE THRIE BEAM BARRIER (STEEL POST)	M	1400		
242 (S)	839521	CABLE RAILING	M	2470		
243 (S)	839559	TERMINAL SYSTEM (TYPE ET)	EA	5		
244 (S)	839565	TERMINAL SYSTEM (TYPE SRT)	EA	78		
245 (S)	839568	TERMINAL ANCHOR ASSEMBLY (TYPE SFT)	EA	46		
246	839701	CONCRETE BARRIER (TYPE 60)	M	30		
247 (F)	839702	CONCRETE BARRIER (TYPE 60A)	M	115		
248	839703	CONCRETE BARRIER (TYPE 60C)	M	540		
249	839704	CONCRETE BARRIER (TYPE 60D)	M	780		
250 (F)	048866	CONCRETE BARRIER (TYPE 60A MODIFIED)	M	178		
251	023020	CONCRETE BARRIER (TYPE 60W)	M	460		
252 (F)	839725	CONCRETE BARRIER (TYPE 736)	M	1780		
253	032021	CONCRETE BARRIER (TYPE 736SV)	M	30		
254 (S)	840515	THERMOPLASTIC PAVEMENT MARKING	M2	540		
255 (S)	840560	THERMOPLASTIC TRAFFIC STRIPE (SPRAYABLE)	M	259 000		
256 (S)	850101	PAVEMENT MARKER (NON-REFLECTIVE)	EA	46 900		
257 (S)	850111	PAVEMENT MARKER (RETROREFLECTIVE)	EA	23 600		
258 (S)	850122	PAVEMENT MARKER (RETROREFLECTIVE-RECESSED)	EA	2300		
259 (S)	860201	SIGNAL AND LIGHTING	LS	LUMP SUM	LUMP SUM	
260 (S)	023022	SIGN DISCONNECT	EA	10		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
301 (S)	023051	CONDUCTOR (NO. 12)	M	20		
302 (S)	023052	CONDUCTOR (NO. 10)	M	5650		
303 (S)	869005	CONDUCTOR (NO. 8)	M	9340		
304 (S)	869006	CONDUCTOR (NO. 6)	M	6430		
305 (S)	869007	CONDUCTOR (NO. 4)	M	6000		
306 (S)	023053	CONDUCTOR (NO. 2)	M	4540		
307 (S)	023054	CONDUCTOR (NO. 1)	M	460		
308 (S)	023055	CONDUCTOR (NO. 2/0)	M	6100		
309 (S)	023056	CONDUCTOR (NO. 4/0)	M	30		
310 (S)	023057	CONDUCTOR (BARE NO. 8)	M	8700		
311 (S)	023058	TELEPHONE CABLE	M	2300		
312 (S)	023059	LOOP DETECTOR LEAD-IN CABLE	M	700		
313 (S)	869034	NO. 5(T) PULL BOX	EA	100		
314 (S)	869035	NO. 5 PULL BOX	EA	91		
315 (S)	869037	NO. 6(E) PULL BOX	EA	38		
316 (S)	869043	REMOVE PULL BOX	EA	13		
317 (S)	023060	NO. 6(E) (T) PULL BOX	EA	16		
318 (S)	023061	NO. 9/9A STRUCTURE PULL BOX	EA	13		
319	BLANK					
320	023414	RECONSTRUCT ROCK SLOPE PROTECTION	M3	1600		

**ENGINEER'S ESTIMATE
08-3555U4**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
321	023415	RELOCATE GRATE	EA	60		
322	150844	REMOVE SLOPE PAVING	M2	1270		
323	153152	COLD PLANE ASPHALT CONCRETE PAVEMENT (30 MM MAXIMUM)	M2	26 000		
324	023416	1524 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	13		
325	720118	ROCK SLOPE PROTECTION (2T, METHOD A)	M3	500		
326	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

TOTAL BID: _____