

DEPARTMENT OF TRANSPORTATION

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October 25, 2002

04-SF-80-4.9/5.9
04-0435V4

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in THE CITY AND COUNTY OF SAN FRANCISCO FROM FIFTH STREET TO SAN FRANCISCO-OAKLAND BAY BRIDGE.

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 November 19, 2002, instead of November 5, 2002.

This addendum is being issued to set a new bid opening date as shown herein and revise the Project Plans, the Notice to Contractors and Special Provisions, and the Proposal and Contract.

Project Plan Sheets 7, 9, 10, 13, 15, 51, 53, 321, 322, 323, 370, 538, 588, 667, 676, 775, 781, 821, 884, 885, 945, 948, 956, 971, 995, 997, 998, 1001, 1004, 1007, 1011A, 1020, 1029, 1130, 1143, 1212, 1213, 1214, 1215, 1216, 1218, 1219, 1220, 1258, 1302, 1309C, 1336, 1376, 1386, 1387, 1389, 1392, 1394, 1465, 1466, 1467, and 1489 are revised. Half-sized copies of the revised sheets are attached for substitution for the like-numbered sheets.

In the Special Provisions, Section 2-1.08, "SUBMITTAL OF SMALL BUSINESS INFORMATION" is changed to "SMALL BUSINESS GOAL AND REPORTING," and is revised as attached.

In the Special Provisions, Section 5-1.20, "CONTRACTOR-CONTROLLED INSURANCE PROGRAM (CCIP)," is revised as attached.

In the Special Provisions, Section 6., "INCENTIVES AND DISINCENTIVES FOR COMPLETION OF DESIGNATED PORTIONS OF WORK," subsection "INCENTIVES AND DISINCENTIVES" subparagraph "A," section 2 is revised as follows:

"The designated portion of work shall be diligently prosecuted to completion before the expiration of nine consecutive extended weekend closures. Nine consecutive extended weekend closures will be the basis for the determination of incentive payments and disincentive deductions to complete the designated portion of work. For each and every extended weekend closure in excess of nine weekends, a disincentive deduction of \$200,000 will be deducted from any monies due to the Contractor under this contract. For each and every extended weekend closure less than nine weekends, to complete the designated portion of work, the Contractor will receive an incentive payment of \$200,000. The total incentive payment will not exceed \$600,000. No credit will be issued to offset the damages specified in "Closure Requirements and Conditions" of these special provisions."

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In the Special Provisions, Section 6., "INCENTIVES AND DISINCENTIVES FOR COMPLETION OF DESIGNATED PORTIONS OF WORK," subsection "INCENTIVES AND DISINCENTIVES" subparagraph "B," section 2 is revised as follows:

"The designated portion of work shall be diligently prosecuted to completion before the expiration of nine consecutive extended weekend closures. Nine consecutive extended weekend closures will be the basis for the determination of incentive payments and disincentive deductions to complete the designated portion of work. For each and every extended weekend closure in excess of nine weekends, a disincentive deduction of \$500,000 will be deducted from any monies due to the Contractor under this contract. For each and every extended weekend closure less than nine weekends, to complete the designated portion of work, the Contractor will receive an incentive payment of \$500,000. The total incentive payment will not exceed \$1,500,000. No credit will be issued to offset the damages specified in "Closure Requirements and Conditions" of these special provisions."

In the Special Provisions, Section 10-1.02, "ORDER OF WORK," the following paragraph is added after the twenty-fourth paragraph:

"The Contractor shall not perform any bridge removal and falsework erection operations for the construction of Frame 8U (SFOBBUP line) on any of the weekends encompassing a designated holiday or the above noted events. If one of these events above, or excluded holiday weekends occurs within the window of nine consecutive weekends as determined in the "INCENTIVES AND DISINCENTIVES FOR COMPLETION OF DESIGNATED PORTIONS OF WORK" in these special provisions", then the event or holiday weekend shall be excluded from the nine consecutive weekends."

In the Special Provisions, Section 10-1.02, "ORDER OF WORK," the twenty-sixth paragraph is revised as follows:

"The Contractor shall not perform bridge removal or falsework erection operations during all of the weekends inclusive in the period between Thanksgiving Day and New year's Day. The Contractor shall not begin bridge removal or falsework erection operations for the construction of Frame 8U (SFOBBUP Line) after September 15, and the Contractor shall complete any portions of bridge removal or falsework erection operations that he begins prior to September 15 by the following Thanksgiving Day."

In the Special Provisions, Section 10-1.29, "MAINTAINING TRAFFIC," Lane Closure Chart No. 28, the location is revised as follows:

"Location: Eastbound I-80 - On the First Street on-ramp, Essex Street on-ramp, and the Bus on-ramp simultaneously"

In the Special Provisions, Section 10-1.39, "EXISTING HIGHWAY FACILITIES," subsection "BRIDGE REMOVAL," the thirteenth and fourteenth paragraphs are replaced with the following eleven paragraphs:

"Prior to concrete removal, the Contractor shall locate all prestressing steel and anchorages by non-destructive methods. During the removal operations of the existing bent caps, the Contractor shall only cut one prestressing strand between displacement and crack monitoring of the bent caps.

The Contractor shall submit a complete bridge removal plan to the Engineer detailing procedures and sequence for removing portions of bridge, including all features necessary to remove the bridges in a safe and controlled manner.

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The bridge removal plan shall be furnished for all bridge removal locations and shall include the following:

- A. The bridge removal sequence for the entire structure, including staging of bridge removal;
- B. Equipment locations on the structure during removal operations;
- C. Temporary support shoring or temporary bracing;
- D. Locations where work is to be performed over traffic; and
- E. Details and locations of protective covers or other measures to assure that people, property, and improvements will not be endangered.
- F. Displacement and crack monitoring systems, where required.

A displacement and crack monitoring system shall be furnished for the removal of Bents 43 through 51 and Bents 1 through 6 of Bridge No. 34-0118R/L.

The displacement and crack monitoring systems shall include equipment to be used, location of control points, method and schedule of taking measurements.

The Contractor shall perform an initial survey as part of the displacement and crack monitoring system to record the location of the existing structure prior to the commencement of any work. Two copies of the survey shall be signed by an engineer, who is registered as a Civil Engineer in the State of California, and submitted to the Engineer.

Vandal-resistant displacement monitoring equipment shall be provided and maintained. Vertical, horizontal and rotational displacements of the existing structure shall be monitored continuously during bridge removal operations and shall be accurately measured and recorded at least every four hours during the removal work. Elevations shall be taken prior to the start of bridge removal operations, and immediately after bridge removal is complete. As a minimum, control points shall be placed at each quarter point location along the bent cap between supports and at any cantilevered end. The records of vertical, horizontal and rotational displacement shall be signed by an engineer who is registered as a Civil Engineer in the State of California and available to the Engineer at the jobsite during working hours, and a copy of the record shall be delivered to the Engineer at the completion of twenty four hour period.

The Contractor shall document and monitor the existing bent caps for the development of cracks continually during removal operations.

Should unanticipated displacements, cracking or other damage occur, the construction shall be discontinued until corrective measures satisfactory to the Engineer are performed. Damage to the structure as a result of the Contractor's operations shall be repaired by the Contractor according to the requirements in Section 7-1.11, "Preservation of Property," of the Standard Specifications.

No bridge removal operations shall begin until associated interim supports have attained 100% of the specified concrete strength.

Full compensation for displacement and crack monitoring system shall be considered as included in the contract lump sum price paid for bridge removal at the locations defined by the stage in which the bents are removed and no additional compensation will be allowed therefor."

In the Special Provisions, Section 10-1.40, "TEMPORARY SUPPORTS," subsection "TEMPORARY SUPPORT DESIGN CRITERIA," the third sentence of the third paragraph is revised as follows:

"The mechanical connections shall be capable of resisting the lateral temporary support design forces shown on the plans."

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In the Special Provisions, Section 10-1.63, "PRESTRESSING," the seventh paragraph is revised as follows:

"The contract lump sum price paid for prestressing shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing the prestressing system, complete in place, including the anchor plates, bearing plates, anchorage devices and prestressing steel of the prestressing system, cleaning and painting the prestressing system, bonding and grouting bearing pads and grouting high-strength bars in pipe sleeves, 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 10-1.70, "CONCRETE STRUCTURES," subsection "MASS CONCRETE," in the sub-subsection "Construction for Mass Concrete," the eighth paragraph is revised as follows:

"When the mass concrete has reached its initial peak temperature, cooling shall be continued for a period of at least 1 to 2 weeks at a rate such that the concrete temperature drop generally does not exceed 4.0°F per day. When the rate of temperature change is exceeded, post-cooling operations shall be stopped until the temperature rises again. Cooling shall resume when concrete temperature approaches the initial peak temperature."

In the Special Provisions, Section 10-1.70, "CONCRETE STRUCTURES," subsection "MASS CONCRETE," in the sub-subsection "Acceptance Criteria for Mass Concrete," criteria "B" of the first paragraph is revised as follows:

"B. The maximum allowable temperature differential between any surface exterior temperature and the center interior temperature of the mass concrete is 36°F."

In the Special Provisions, Section 10-1.70, "CONCRETE STRUCTURES," subsection "MEASUREMENT AND PAYMENT," the following paragraph is added after the last paragraph:

"Full compensation for conforming to the mass concrete requirements shall be considered as included in the contract prices paid for the various contract items of work involved and no additional compensation will be allowed therefor."

In the Special Provisions, Section 10-1.705, "POLYESTER CONCRETE OVERLAY," is added as attached.

In the Special Provisions, Section 10-1.855, "NEOPRENE SEAL," is added as attached.

In the Special Provisions, Section 10-1.925, "ISOLATION JOINT CASING," the sixth paragraph is revised as follows:

"At no time shall the superstructure be raised more than 5/8 inch above the existing roadway."

In the Special Provisions, Section 10-1.111, "MISCELLANEOUS METAL (BRIDGE)," in the third paragraph, the sixth item which reads as "Steel plate, pipe rail and gate ladder at the anchorage housing." is revised as follows:

"Steel plate, pipe rail steel flex frame rail and gate ladder at the anchorage housing."

In the Proposal and Contract, "CALTRANS BIDDER - SMALL BUSINESS - INFORMATION" form, is revised as attached.

In the Proposal and Contract, the Engineer's Estimate Items 90, 95, 96, 98, 99, 102, 128, 130, 172, 190, 221, 222, 223, 224, 253, and 303 are revised, Items 308, 309, 310, 311, and 312 are added and Items 189 and 307 are deleted as attached.

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To Proposal and Contract book holders:

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

Attached is a copy of Material Information.

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

2-1.08 SMALL BUSINESS GOAL AND REPORTING

Pursuant to Governor's Executive Order D-37-01, the Department is directed to pursue an annual 25% small business participation level in State contracting. In furtherance of this provision, the Department has established a 10 percent small business goal on this contract. Contractors are requested to provide a completed "CALTRANS BIDDER-SMALL BUSINESS-INFORMATION" form with the bid to identify the listed small businesses. The form is included in the Proposal.

Contractors, subcontractors, suppliers and service providers who qualify are requested to apply for certification as a "Small Business" by submitting an application to the Department of General Services, Office of Small Business and DVBE Certification, 707 3rd Street, West Sacramento, CA 95605 Telephone No. (916) 375-4940 or (800) 559-5529.

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.

It is requested that the Contractor provide, on a quarterly basis, and within 30 days of contract acceptance, reports summarizing the participation of State certified Small Businesses used in the performance of this contract. It is requested that each 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 by item number, description of work performed and materials provided, business name, Small Business certification number, amount of payment, date payment was made, and cumulative payment. Full compensation for providing the Small Business Information form and quarterly reports of Small Business participation will shall be considered as included in the various items of work and no separate payment will be made therefor.

5-1.20 CONTRACTOR-CONTROLLED INSURANCE PROGRAM (CCIP)

Attention is directed to Section 7, "Legal Relations and Responsibility," of the Standard Specifications and these special provisions. Nothing in this section shall be construed to change or waive the requirements of any other provisions of the contract.

To comply with "Indemnification and Insurance" of these special provisions, the Contractor shall implement a contractor-controlled insurance program (CCIP), as herein defined. The indemnification requirements of "Indemnification and Insurance" of these special provisions shall apply only to the State, including its officers, directors, and agents. The indemnification requirements of "Indemnification and Insurance" of these special provisions may apply, at the discretion of the Contractor or Joint Venture, to its subcontractors and when on the job site, suppliers, manufacturers, and vendors.

A CCIP is a controlled insurance program by which the prime contractor, or joint venture, arranges and implements a controlled master insurance property/casualty insurance program covering itself and all of its subcontractors and when on the job site, suppliers, manufacturers, and vendors; regardless of tier or level of participation in the performance of this contract. Under the CCIP, the levels of insurance and coverage provided by the prime contractor, or joint venture, for its subcontractors and when on the job site, suppliers, manufacturers and vendors shall comply with the coverage requirements of these special provisions "Indemnification and Insurance."

The CCIP shall provide professional liability insurance and shall cover actual or alleged negligent acts, errors or omissions committed by the Contractor or Joint Venture, subcontractors, suppliers, manufactures, and vendors, their agents or employees, arising out of work performed under this contract. The policy coverage shall extend to include bodily injury and property damage from negligent performance of professional service and personal injury liability coverage for claims arising out of the work. The policy shall be on a claims made basis and have limits of liability of not less than \$10,000,000 per claim and \$10,000,000 in the project aggregate, subject to a \$100,000 per claim deductible, unless such limits and deductibles are unobtainable at the time of coverage inception or renewal during the term of the contract. Higher limits may be obtained.

The CCIP shall provide pollution liability insurance in the amount not less than \$10,000,000 per occurrence and \$10,000,000 in the project aggregate with respect to any operation of the Contractor or Joint Venture, subcontractors and when on the job site, suppliers, manufacturers, and any vendors required under or incidental to the performance of this contract, including but not limited to handling asbestos contaminated materials, lead paint materials, petroleum, petroleum by-products, and all other environmentally regulated substances and hazardous material. Pollution liability insurance shall be provided unless such limits and deductibles are unobtainable at the time of coverage inception or renewal during the term of the project. Higher limits may be obtained.

The CCIP shall provide builders' risk insurance that insures the interest of the State, Contractor or Joint Venture, subcontractors and when on the job site, suppliers, manufacturers, and any vendors of all tiers providing coverage on an "All Risk" basis, including, but not limited to, coverage against fire, floods, lightning, wind damage, hail, tsunamis, earthquakes, and other natural disasters, epidemics, quarantine restrictions, strikes, labor disputes, shortage of materials and freight embargoes, explosion, acts of terrorism, acts of the public enemy, civil commotion, aircraft collision, vehicle collision, collapse, and smoke. Coverage shall include all materials, supplies, and equipment that are intended for specific installation at the insured Project Site, while such materials, supplies, and equipment are located at an insured project site, in transit, and while temporarily located away from an insured project site for the purpose of repair, adjustment, or storage at the risk of one of the insured parties. Project site includes the actual geographic location for this project including limits of the project as shown on the project plans, areas authorized for Contractor use by these special provisions and contract plans, and any location or facility established for the sole or primary purpose of contributing to this specific project. The limit of liability shall be set at the value of this project, with a maximum deductible of \$100,000. Builders' risk insurance shall be provided unless such limits and deductibles are unobtainable at the time of coverage inception or renewal during the term of the project. Higher limits may be obtained.

The CCIP shall provide insurance coverage for events related to force majeure, transportation delays, strikes, changes in law, and acts of subcontractors and when on the job site, suppliers, manufacturers and vendors within the limit of liability and deductible amount the Contractor/Joint Venture deems appropriate for this contract.

For subcontractors, suppliers, manufacturers, and vendors, the CCIP is not required to provide automobile liability, automobile umbrella liability, off-site workers' compensation, off-site general liability, and property insurance. If the CCIP does not provide automobile liability, automobile umbrella liability, off-site workers' compensation, off-site general liability, and property insurance, for subcontractors, suppliers, manufacturers, and vendors, then, in accordance with Section 8-1.01 "Subcontracting" of the Standard Specifications all subcontractors, suppliers, manufactures, and vendors, regardless of tier, are required to provide automobile liability, automobile umbrella liability, off-site workers' compensation, off-site general liability, and property insurance for themselves that fully complies with "Indemnification and Insurance" of these special provisions.

The prime contractor, or joint venture, shall arrange for and implement the CCIP and be solely responsible for any and all elements of CCIP administration. A CCIP policy complying with the requirements of this special provision shall remain in effect and provide continuous coverage for the entire project term.

The Contractor, prior to or at the pre-construction conference and the commencement of any work on the project site, shall submit to the Engineer complete details of the CCIP which demonstrates that the CCIP fully complies with the requirements of this special provision including, but not limited to, evidence of coverage, a complete description of program design outlining the claim/risk management program, the complete safety program, loss control program, copies of all applicable policies, a listing of all assumed exposures, insurance types, limits, coverages, pricing, premiums, deductibles, guaranteed rates, estimated administration costs of the CCIP, and the estimated ultimate costs or savings resulting from implementation of the CCIP in lieu of a traditional insurance program. The Contractor shall also submit evidence of coverage for those insurances that are not specifically provided for under the CCIP.

On a semi-annual basis, the Contractor shall submit to the Engineer a financial and narrative evaluation report comparing costs of utilizing a CCIP versus anticipated costs of utilizing a traditional insurance program. The report shall be of sufficient detail and organization for the Engineer to determine the overall financial benefit or liability of CCIP versus traditional insurance program utilization. Such a report must minimally include, but not be limited to, a narrative describing anticipated versus actual performance of CCIP versus traditional insurance program utilization; a financial comparison summary of premium, claim/risk management, safety, and loss control program costs segregated by premium, deductible, and variable administrative costs; a narrative that compares anticipated utilization of traditional insurance versus actual CCIP utilization relative to the Contractor's or Joint Venture's ability to: administrate the contract, utilize small business, utilize disadvantaged business, manage overall project safety, and manage disputes between Contractor or Joint Venture and subcontractors, manufactures, and vendors. The Contractor shall submit an original and four copies of each semi-annual report in order to be entitled to payment in accordance with this Special Provision.

All records of the Contractor related to the CCIP shall be open to inspection by representatives of the Department, during the life of the contract and for a period of not less than 3 years after the date of acceptance thereof, and the Contractor shall retain such records for that period.

The Department acknowledges that the Contractor's cost records related to the CCIP may constitute trade secrets that are eligible for protection from disclosure under the provisions of the California Public Records Act. The Department understands that the Contractor's cost records related to the CCIP may not be known outside the contractor's business, may be known only to a limited extent and only by a limited number of employees of the Contractor, may be safeguarded while in the Contractor's possession, may be extremely valuable to the Contractor, and could be extremely valuable to the Contractor's competitors. The Department agrees that Contractor's cost records that are marked as "Trade Secret" and provided to the Department in compliance with this Special Provision shall be considered confidential and shall not be released or disclosed outside the Department, unless disclosure is mandated pursuant to a request for inspection under the California Public Records Act. If documents marked as "Trade Secret" are the subject of a request for inspection under the California Public Records Act, the Department shall object to such disclosure under all applicable exemptions from disclosure provided by the California Public Records Act, provided, however, in the event of a court proceeding to compel disclosure, the Contractor may intervene in such proceeding and substitute itself in place of the Department. Whether or not the Contractor intervenes, the Contractor shall reimburse the Department for any costs, fees or sanctions imposed on the Department arising out of its assertion that the Contractor's cost records marked "Trade Secret" are exempt from disclosure. In the event of arbitration of Contractor claims pursuant to Public Contract Code section 10240 et seq., documents designated as "Trade Secret" shall be subject to discovery pursuant to the process of the arbitration proceeding.

All costs associated with CCIP development and implementation, as specified herein, shall be considered to be included in the time related overhead item of work and no additional compensation will be provided therefor. The Contractor shall be compensated a lump sum price of \$2,500 for each semi-annual report that meets the requirements of this special provision.

10-1.705 POLYESTER CONCRETE OVERLAY

GENERAL

This work shall consist of constructing a polyester concrete overlay, including application of a prime coat, in conformance with the details shown on the plans and these special provisions.

Before starting deck overlay work on the project, the Contractor shall submit for approval by the Engineer, a program for public safety associated with the use of methacrylate resin and polyester concrete during the construction of the project. This program shall identify materials, equipment, and methods to be used. The Contractor shall not perform any deck overlay work on the project, other than that specifically authorized in writing by the Engineer, until the program has been approved.

If the measures being taken by the Contractor are inadequate to provide for public safety associated with the use of methacrylate resin and polyester concrete, the Engineer will direct the Contractor to revise the operations and public safety program. These directions will be in writing and will specify the items of work for which the Contractor's program for public safety associated with the use of methacrylate resin and polyester concrete is inadequate. No further work shall be performed on these items until the public safety measures are adequate, and if required, a revised program for public safety associated with the use of methacrylate resin and polyester concrete has been approved.

The Engineer will notify the Contractor in writing of the approval or rejection of any submitted or revised program for public safety associated with the use of methacrylate resin and polyester concrete in not more than 10 working days following submittal.

The State will not be liable to the Contractor for failure to approve all or any portion of an originally submitted or revised program for public safety associated with the use of methacrylate resin and polyester concrete, nor for any delays to the work due to the Contractor's failure to submit an acceptable program for public safety associated with the use of methacrylate resin and polyester concrete.

PREPARE CONCRETE BRIDGE DECK SURFACE

This work shall consist of cleaning the portland cement concrete deck surface on which polyester concrete is being placed by using steel shot-blasting and blowing clean the deck surface, as shown on the plans and as described in these special provisions.

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

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

Where abrasive blasting is being performed within 10 feet of a lane occupied by public traffic, the residue including dust shall be removed immediately after contact between the abrasive and the surface being treated. Removal of the residue shall be performed by a vacuum attachment operating concurrently with the abrasive blasting operation.

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

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

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

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

MATERIALS

Polyester concrete shall consist of polyester resin binder and dry aggregate. The resin shall be an unsaturated isophthalic polyester-styrene co-polymer conforming to the following:

POLYESTER RESIN BINDER		
PROPERTY	REQUIREMENT	TEST METHOD
* Viscosity	75 to 200 cps (RVT, No. 1 Spindle, 20 RPM at 77° F.)	ASTM D 2196
* Specific Gravity	1.05 to 1.10 at 77° F.	ASTM D 1475
Elongation	35 percent minimum Type I at 0.45 in./min. Thickness= 0.25±0.03in.	ASTM D 638
	Sample Conditioning: 18/25/50 + 5/70	ASTM D 618
Tensile Strength	2,500 psi minimum Type I at 0.45 in./min. Thickness= 0.25±0.03in.	ASTM D 638
	Sample Conditioning: 18/25/50 + 5/70	ASTM D 618
* Styrene Content	40 percent to 50 percent (by weight)	ASTM D 2369
Silane Coupler	1.0 percent, minimum (by weight of polyester styrene resin)	
PCC Saturated Surface-Dry Bond Strength	500 psi, minimum at 24 hours and 70±2° F.	California Test 551
* Static Volatile Emission	60 gram per square meter, loss, maximum	South Coast Air Quality Management District, Standard Method
* Test shall be performed prior to adding initiator.		

The silane coupler shall be an organosilane ester, gammamethacryloxypropyltrimethoxysilane. The promoter shall be compatible with suitable methyl ethyl ketone peroxide (MEKP) and cumene hydroperoxide (CHP) initiators.

Aggregate for polyester concrete shall conform to the provisions in Section 90-2.02, "Aggregates," of the Standard Specifications and either of the following combined aggregate gradings:

COMBINED AGGREGATE		
Sieve Size	3/8" Max. Percent Passing	No.4 Sieve Max. Percent Passing
1/2"	100	100
3/8"	83 - 100	100
No. 4	65 - 82	62 - 85
No. 8	45 - 64	45 - 67
No. 16	27 - 48	29 - 50
No. 30	12 - 30	16 - 36
No. 50	6 - 17	5 - 20
No. 100	0 - 7	0 - 7
No. 200	0 - 3	0 - 3

Aggregate retained on the No. 8 sieve shall have a maximum of 45 percent crushed particles when tested in conformance with California Test 205. Fine aggregate shall consist of natural sand.

The polyester resin binder in the concrete shall be approximately 12 percent by mass of the dry aggregate; the exact percentage will be determined by the Engineer.

The average of coarse and fine aggregate absorption shall not exceed one percent as determined by California Tests 206 and 207.

At the time of mixing with the resin, the moisture content of the aggregate, as determined by California Test 226, shall not exceed one half of the aggregate absorption.

The prepared surface shall receive a wax-free, low odor, high molecular weight methacrylate prime coat. The prime coat shall be a resin, and prior to adding initiator, the resin shall have a maximum volatile content of 30 percent when tested in conformance with the requirements in ASTM Designation: D 2369, and shall conform to the following:

High Molecular Weight Methacrylate (HMWM) Resin		
PROPERTY	REQUIREMENT	TEST METHOD
* Viscosity	25 cps, maximum, (Brookfield RVT with UL adaptor, 50 RPM at 77° F.)	ASTM D 2196
* Specific Gravity	0.90, minimum, at 77° F.	ASTM D 1475
* Flash Point	180° F., minimum	ASTM D 3278
* Vapor Pressure	1.0 mm Hg, maximum, at 77° F.	ASTM D 323
Tack-free time	400 minutes, maximum at 77° F.	California Test 551
PCC Saturated Surface-Dry Bond Strength	500 psi, minimum at 24 hours and 70±2° F.	California Test 551
* Test shall be performed prior to adding initiator.		

The promoter/initiator system for the methacrylate resin shall consist of a metal drier and peroxide. If supplied separately from the resin, at no time shall the metal drier be mixed with the peroxide directly. The containers shall not be stored in a manner that will allow leakage or spillage from one material to contact the containers or material of the other.

A Material Safety Data Sheet shall be furnished prior to use for each shipment of polyester resin binder and high molecular weight methacrylate resin.

The Contractor shall allow 14 days for sampling and testing of the polyester resin binder and high molecular weight methacrylate resin prior to proposed use.

If bulk resin is to be used, the Contractor shall notify the Engineer in writing 10 days prior to the delivery of the bulk resin to the jobsite. Bulk resin is any resin that is stored in containers in excess of 55 gallons.

CONSTRUCTION

Prior to applying the prime coat, the area to receive the prime coat shall be dry and blown clean by compressed air to remove accumulated dust and any other loose material. The surface temperature shall be at least 50°F and the relative humidity less than 85 percent when the prime coat is applied.

The prime coat shall be uniformly applied to completely cover the surface to receive the polyester concrete. The rate of spread shall be approximately one gallon per 100 square feet of surface.

The prime coat shall be allowed to cure a minimum of 15 minutes before placing polyester concrete. If the primed surface becomes contaminated, the contaminated area shall be cleaned by abrasive blasting and reprimed at the Contractor's expense.

Polyester concrete shall be placed within 120 minutes after the prime coat has been applied.

Polyester concrete shall be mixed in mechanically operated mixers. Mixer size shall be limited to a nine cubic foot capacity, unless approved by the Engineer.

A continuous mixer, employing an auger screw/chute device, may be approved for use by the Engineer upon demonstrating its ability to produce a satisfactory product. The continuous mixer shall 1) be equipped with a metering device that automatically measures and records the aggregate volumes and the corresponding resin volumes, and 2) have a readout gage, visible to the Engineer at all times, that displays the volumes being recorded. The volumes shall be recorded at no greater than 5 minute intervals along with the time and date of each recording. A printout of the recordings shall be furnished to the Engineer at the end of each workshift.

The amount of initiator used in polyester concrete shall be sufficient to produce an initial set time between 30 and 120 minutes during placement. The initial set time will be determined by using an initial-setting time Gillmore needle in conformance with the requirements in ASTM Designation: C 266. Accelerators or inhibitors may be required to achieve proper set times and shall be used as recommended by the resin supplier.

The resin binder shall be initiated and thoroughly blended just prior to mixing with aggregate. The polyester concrete shall be mixed a minimum of 2 minutes prior to placing.

Polyester concrete shall be placed prior to gelling and within 15 minutes following addition of initiator, whichever occurs first. Polyester concrete that is not placed within this time shall be discarded.

The surface temperature of the area to receive polyester concrete shall be the same as specified above for the prime coat. The finishing equipment used shall strike off the polyester concrete to the established grade and cross section. Finishing equipment shall be fitted with vibrators or other means of consolidating the polyester concrete to the required compaction.

The polyester concrete shall be consolidated to a relative compaction of not less than 97 percent in conformance with California Test 552.

The finished surface of the polyester concrete overlay shall conform to the provisions in Section 51-1.17, "Finishing Bridge Decks," of the Standard Specifications and these special provisions.

Polyester concrete surfaces shall receive an abrasive sand finish. The sand shall be commercial quality blast sand conforming to the quality and dryness requirements for polyester concrete aggregate as specified in these special provisions. Ninety-five percent of the sand shall pass the No. 8 sieve, and 95 percent shall be retained on the No. 20 sieve.

The sand finish shall be uniformly applied immediately after overlay strike-off and before gelling occurs to provide a minimum uniform coverage of 0.8 pounds per square yard.

The surface texture of polyester concrete overlay surfaces shall be uniform and shall have a coefficient of friction of not less than 0.35 as measured by California Test 342. Any portions of surfaces that do not meet the above provision shall be ground or grooved parallel to the centerline in conformance with the provisions of Section 42, "Groove and Grind Pavement," of the Standard Specifications until the above tolerance is met.

Traffic and equipment shall not be permitted on the overlay for a minimum of 4 hours following final finishing. Overlays shall be protected from moisture for not less than 4 hours after finishing.

MEASUREMENT AND PAYMENT

Furnish polyester concrete overlay will be measured by the cubic foot. The volume to be paid for will be determined from calculations based on the quantity of resin binder used and the yield of the specified mix design. The Contractor shall furnish suitable measuring devices to assure correct proportioning of materials and accurate measurements for calculating pay quantities. The pay quantity shall be the calculated quantity of polyester concrete overlay used in the work, exclusive of material used in trial overlays, and any wasted or unused material.

Place polyester concrete overlay will be measured by the square foot. The area to be paid for will be based on the dimensions shown on the plans.

The contract price paid per cubic foot for furnish polyester concrete overlay shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing polyester concrete, including polyester resin binder, promoter/initiator, and aggregate, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract price paid per square foot for place polyester concrete overlay shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in constructing the polyester concrete overlay, complete in place, including application of prime coat and furnishing, constructing, and disposing of trial overlays and base, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for compliance with the requirements for a program for public safety associated with use of methacrylate resin and polyester concrete shall be considered as included in the contract prices paid for the items of work involving polyester concrete overlay and no additional compensation will be allowed therefor.

Full compensation for preparing the concrete bridge deck surface, involved in the use of polyester concrete shall be considered as included in the contract price paid per square foot for place polyester concrete overlay and no separate payment will be made therefor. No payment will be made for prepare concrete bridge deck surface.

10-1.855 NEOPRENE SEAL

The 4" neoprene seal at the anchorage housing shall conform to the requirements for neoprene in Section 51-1.14, "Waterstops," of the Standard Specifications and these special provisions.

The sheet neoprene shall be fabricated to fit the groove accurately. The neoprene shall be installed at such time and in such manner that it will not be damaged by construction operations. The seal shall be cleaned of all dirt, debris, and other foreign material immediately prior to installation of the sheet neoprene.

Neoprene seal will be measured by the linear foot from end to end along the centerline of the completed seal.

The contract price paid per foot for neoprene seal shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and installing the neoprene seal, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

ENGINEER'S ESTIMATE

04-0435V4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
81	024329	ROADWAY EXCAVATION (TYPE NRH)	CY	9,288		
82	024330	ROADWAY EXCAVATION (TYPE RH)	CY	1,000		
83	190138	ROADWAY EXCAVATION (DETOUR REMOVAL)	CY	4,742		
84	024331	STRUCTURE EXCAVATION (UTILITY TRENCH)	CY	2,560		
85 (F)	049031	STRUCTURE EXCAVATION, TYPE NH	CY	518		
86	024332	STRUCTURE EXCAVATION, TYPE NH RETAINING WALL	CY	300		
87 (F)	049032	STRUCTURE EXCAVATION, TYPE DNH RETAINING WALL	CY	102		
88	024333	STRUCTURE EXCAVATION (RETAINING WALL- TYPE NRH)	CY	430		
89 (F)	049033	STRUCTURE EXCAVATION, TYPE NRH	CY	1,348		
90 (F)	049034	STRUCTURE EXCAVATION, TYPE DNRH	CY	5,301		
91 (F)	049035	STRUCTURE EXCAVATION, TYPE DNH	CY	3,821		
92 (F)	049036	STRUCTURE EXCAVATION, TYPE RH	CY	158		
93 (F)	049037	STRUCTURE EXCAVATION, TYPE DNRH RETAINING WALL	CY	52		
94 (F)	049038	STRUCTURE EXCAVATION (SOLDIER PILE WALL) TYPE DNRH	CY	430		
95 (F)	049039	STRUCTURE EXCAVATION (16"-42") PILING TYPE DNH	CY	2,065		
96 (F)	049040	STRUCTURE EXCAVATION (60"-84") PILING TYPE DNH	CY	6,869		
97 (F)	049041	STRUCTURE EXCAVATION (90"-108") PILING TYPE DNH	CY	11,514		
98 (F)	049042	STRUCTURE EXCAVATION (16"-42") PILING TYPE DNRH	CY	162		
99 (F)	049043	STRUCTURE EXCAVATION (60"-84") PILING TYPE DNRH	CY	828		
100 (F)	049044	STRUCTURE EXCAVATION (90"-108") PILING TYPE DNRH	CY	862		

ENGINEER'S ESTIMATE

04-0435V4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
101 (F)	049045	STRUCTURE EXCAVATION (60"-84") PILING TYPE DRH	CY	4		
102 (F)	193003	STRUCTURE BACKFILL (BRIDGE)	CY	5,214		
103 (F)	193013	STRUCTURE BACKFILL (RETAINING WALL)	CY	1,045		
104	193031	PERVIOUS BACKFILL MATERIAL (RETAINING WALL)	CY	47		
105	193114	SAND BACKFILL	CY	55		
106 (F)	193119	LEAN CONCRETE BACKFILL	CY	145		
107 (F)	049046	CLASS A CONCRETE BACKFILL	CY	50		
108	194001	DITCH EXCAVATION	CY	110		
109 (F)	197021	EARTH RETAINING STRUCTURE, LOCATION A	SQFT	3,050		
110 (F)	197022	EARTH RETAINING STRUCTURE, LOCATION B	SQFT	2,850		
111 (F)	197023	EARTH RETAINING STRUCTURE, LOCATION C	SQFT	5,060		
112	198001	IMPORTED BORROW	CY	6,704		
113	024334	LIGHTWEIGHT EMBANKMENT MATERIAL (CELLULAR CONCRETE)	CY	900		
114 (S)	200101	IMPORTED TOPSOIL	CY	16,000		
115 (S)	024335	EROSION CONTROL (MULCH)	CY	2,500		
116 (S)	203003	STRAW (EROSION CONTROL)	TON	2.5		
117 (S)	203014	FIBER (EROSION CONTROL)	LB	350		
118 (S)	203021	FIBER ROLLS	LF	4,800		
119 (S)	203024	COMPOST (EROSION CONTROL)	LB	1,200		
120 (S)	203026	MOVE-IN/MOVE-OUT (EROSION CONTROL)	EA	4		

ENGINEER'S ESTIMATE

04-0435V4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
121 (S)	203045	PURE LIVE SEED (EROSION CONTROL)	LB	150		
122 (S)	203061	STABILIZING EMULSION (EROSION CONTROL)	LB	200		
123	208029	4" SUPPLY LINE (BRIDGE)	LF	1,200		
124	208030	6" SUPPLY LINE (BRIDGE)	LF	1,200		
125 (S)	208738	8" CORRUGATED HIGH DENSITY POLYETHYLENE PIPE CONDUIT	LF	570		
126 (S)	208739	10" CORRUGATED HIGH DENSITY POLYETHYLENE PIPE CONDUIT	LF	180		
127	250401	CLASS 4 AGGREGATE SUBBASE	CY	7,780		
128	260301	CLASS 3 AGGREGATE BASE	CY	5,220		
129	290211	ASPHALT TREATED PERMEABLE BASE	CY	1,500		
130	390102	ASPHALT CONCRETE (TYPE A)	TON	20,050		
131	394002	PLACE ASPHALT CONCRETE (MISCELLANEOUS AREA)	SQYD	1,130		
132	394040	PLACE ASPHALT CONCRETE DIKE (TYPE A)	LF	430		
133	394044	PLACE ASPHALT CONCRETE DIKE (TYPE C)	LF	730		
134	394049	PLACE ASPHALT CONCRETE DIKE (TYPE F)	LF	500		
135	049047	DRILLED HOLE (24")	LF	930		
136 (S)	490601	16" CAST-IN-DRILLED-HOLE CONCRETE PILING	LF	599		
137 (S)	490602	20" CAST-IN-DRILLED-HOLE CONCRETE PILING	LF	304		
138 (S)	490603	24" CAST-IN-DRILLED-HOLE CONCRETE PILING	LF	1,018		
139 (S)	490604	30" CAST-IN-DRILLED-HOLE CONCRETE PILING	LF	3,465		
140 (S)	490605	36" CAST-IN-DRILLED-HOLE CONCRETE PILING	LF	2,883		

ENGINEER'S ESTIMATE

04-0435V4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
161 (F)	049060	STEEL SOLDIER PILE (W18 X 76)	LF	875		
162	495133	FURNISH 36" CAST-IN-STEEL SHELL CONCRETE PILING	LF	2,575		
163 (S)	495134	DRIVE 36" CAST-IN-STEEL SHELL CONCRETE PILE	EA	35		
164 (S)	500001	PRESTRESSING CAST-IN-PLACE CONCRETE	LS	LUMP SUM	LUMP SUM	
165 (S)	049061	PRESTRESSING (LOCATION A)	LS	LUMP SUM	LUMP SUM	
166 (S)	049062	PRESTRESSING (LOCATION B)	LS	LUMP SUM	LUMP SUM	
167 (S)	049063	PRESTRESSING (LOCATION C)	LS	LUMP SUM	LUMP SUM	
168	049064	PRESTRESSING (LOCATION D)	LS	LUMP SUM	LUMP SUM	
169 (S)	500060	TIEDOWN ANCHOR	EA	61		
170	049065	CATHODIC PROTECTION	LS	LUMP SUM	LUMP SUM	
171 (F)	510051	STRUCTURAL CONCRETE, BRIDGE FOOTING	CY	2,369		
172 (F)	510053	STRUCTURAL CONCRETE, BRIDGE	CY	69,326		
173 (F)	510060	STRUCTURAL CONCRETE, RETAINING WALL	CY	608		
174 (F)	510086	STRUCTURAL CONCRETE, APPROACH SLAB (TYPE N)	CY	291		
175	024336	CLASS B CONCRETE (BACKFILL)	CY	340		
176	510407	CLASS D CONCRETE (BACKFILL)	CY	64		
177 (F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	CY	98.5		
178 (S)	024337	SAN FRANCISCO MANHOLE	EA	3		
179 (S)	024338	SAN FRANCISCO STORM WATER INLET	EA	2		
180	024339	ARCHITECTURAL SURFACE (FIRST STREET RETAINING WALL)	SQFT	2,760		

ENGINEER'S ESTIMATE

04-0435V4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
181	024340	ARCHITECTURAL SURFACE (RETAINING WALL NO. 2)	SQFT	300		
182	024341	ARCHITECTURAL SURFACE (RETAINING WALL NO. 3)	SQFT	1,660		
183 (F)	BLANK					
184	511106	DRILL AND BOND DOWEL	LF	14,490		
185	511109	DRILL AND BOND DOWEL (EPOXY CARTRIDGE)	EA	2,112		
186	049066	ROCK ANCHOR	EA	56		
187 (S)	049067	SPIN-LOCK CONCRETE ANCHORS	LS	LUMP SUM	LUMP SUM	
188 (S)	515062	CORE CONCRETE (3")	LF	110		
189 (S)	BLANK					
190 (S)	049069	CORE CONCRETE (8") AND GROUT STEEL PIPE	LF	62		
191 (S)	049070	CORE CONCRETE (3 1/2")	LF	705		
192 (S)	515064	CORE CONCRETE (5")	LF	4		
193 (S)	049071	CORE CONCRETE (1") AND PRESSURE GROUT DOWEL	LF	120		
194 (S)	515160	CORE CONCRETE (1 1/2")	LF	635		
195 (S)	049072	CORE CONCRETE (1 1/2") AND PRESSURE GROUT DOWEL	LF	1,582		
196 (S)	515161	CORE CONCRETE (1 3/4")	LF	243		
197 (S)	049073	CORE CONCRETE (2") AND PRESSURE GROUT DOWEL	LF	2,930		
198 (S)	515163	CORE CONCRETE (2 1/2")	LF	114		
199	518042	REPLACE BEARING	EA	2		
200 (S)	518051	PTFE SPHERICAL BEARING	EA	126		

ENGINEER'S ESTIMATE

04-0435V4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
221 (S-F)	550110	COLUMN CASING	LB	229,000		
222 (S-F)	550203	FURNISH STRUCTURAL STEEL (BRIDGE)	LB	1,587,300		
223 (S-F)	550204	ERECT STRUCTURAL STEEL (BRIDGE)	LB	1,587,300		
224 (S-F)	049077	ISOLATION CASING	LB	400,300		
225 (F)	560218	FURNISH SIGN STRUCTURE (TRUSS)	LB	128,590		
226 (S-F)	560219	INSTALL SIGN STRUCTURE (TRUSS)	LB	128,590		
227 (S)	562004	METAL (RAIL MOUNTED SIGN)	LB	6,820		
228 (S)	566011	ROADSIDE SIGN - ONE POST	EA	46		
229 (S)	566012	ROADSIDE SIGN - TWO POST	EA	12		
230	568001	INSTALL SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	9		
231 (S-F)	024342	INSTALL SELF ADHESIVE SIGN PANEL	EA	20		
232 (S-F)	568020	INSTALL SIGN PANEL ON EXISTING STRUCTURE	SQFT	585		
233 (F)	570120	TREATED LUMBER AND TIMBER	MFBM	12		
234 (S)	590115	CLEAN AND PAINT STRUCTURAL STEEL	LS	LUMP SUM	LUMP SUM	
235 (S-F)	590135	SPOT BLAST CLEAN AND PAINT UNDERCOAT	SQFT	144		
236	590301	WORK AREA MONITORING	LS	LUMP SUM	LUMP SUM	
237	620060	12" ALTERNATIVE PIPE CULVERT	LF	1,330		
238	620100	18" ALTERNATIVE PIPE CULVERT	LF	2,390		
239	665037	36" CORRUGATED STEEL PIPE (.109" THICK)	LF	9		
240	690118	18" CORRUGATED STEEL PIPE DOWNDRAIN (.109" THICK)	LF	54		

ENGINEER'S ESTIMATE

04-0435V4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
241	703233	GRATED LINE DRAIN	LF	83		
242	024343	3" WELDED STEEL PIPE CLEANOUT	EA	2		
243	703509	6" WELDED STEEL PIPE (.134" THICK)	LF	170		
244 (S)	024344	10" VITRIFIED CLAY PIPE	LF	82		
245 (S)	024345	12" VITRIFIED CLAY PIPE	LF	96		
246 (S)	024346	18" VITRIFIED CLAY PIPE	LF	260		
247	727901	MINOR CONCRETE (DITCH LINING)	CY	64		
248	731502	MINOR CONCRETE (MISCELLANEOUS CONSTRUCTION)	CY	700		
249 (F)	731517	MINOR CONCRETE (GUTTER)	LF	333		
250 (S-F)	750001	MISCELLANEOUS IRON AND STEEL	LB	20,198		
251 (S-F)	750496	MISCELLANEOUS METAL (RESTRAINER - PIPE TYPE)	LB	78,500		
252 (S-F)	750498	MISCELLANEOUS METAL (RESTRAINER - CABLE TYPE)	LB	25,700		
253 (S-F)	750501	MISCELLANEOUS METAL (BRIDGE)	LB	619,076		
254 (S-F)	750505	BRIDGE DECK DRAINAGE SYSTEM	LB	83,890		
255 (F)	049078	CLOCK TOWER SCREEN	LF	120		
256 (S)	800360	CHAIN LINK FENCE (TYPE CL-6)	LF	7,000		
257 (S)	802620	16' CHAIN LINK GATE (TYPE CL-6)	EA	1		
258 (S)	802660	20' CHAIN LINK GATE (TYPE CL-6)	EA	5		
259 (S)	802670	24' CHAIN LINK GATE (TYPE CL-6)	EA	3		
260	820107	DELINEATOR (CLASS 1)	EA	160		

ENGINEER'S ESTIMATE

04-0435V4

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
301	BLANK					
302	030219	BRIDGE REMOVAL (PORTION), LOCATION P	LS	LUMP SUM	LUMP SUM	
303	515020	REFINISH BRIDGE DECK	SQFT	834		
304	030220	ISOLATION JOINT CASING	EA	12		
305	682005	PERMEABLE MATERIAL (BRIDGE)	CY	285		
306	680405	8" PERFORATED STEEL PIPE UNDERDRAIN (0.064" THICK)	LF	600		
307	BLANK					
308	030356	STRUCTURE EXCAVATION (TYPE DRH)	CY	18		
309	030357	NEOPRENE JOINT SEAL	LF	81		
310	515041	FURNISH POLYESTER CONCRETE	CF	27		
311	515042	PLACE POLYESTER CONCRETE	SQFT	162		
312	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

TOTAL BID: _____