

**DEPARTMENT OF TRANSPORTATION**

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



**\*\* WARNING \*\* WARNING \*\* WARNING \*\* WARNING \*\***  
**This document is intended for informational purposes only.**

Users are cautioned that California Department of Transportation (Department) does not assume any liability or responsibility based on these electronic files or for any defective or incomplete copying, excerpting, scanning, faxing or downloading of the contract documents. As always, for the official paper versions of the bidders packages and non-bidder packages, including addenda write to the California Department of Transportation, Plans and Bid Documents, Room 0200, P.O. Box 942874, Sacramento, CA 94272-0001, telephone (916) 654-4490 or fax (916) 654-7028. Office hours are 7:30 a.m. to 4:15 p.m. When ordering bidder or non-bidder packages it is important that you include a telephone number and fax number, P.O. Box and street address so that you can receive addenda.

April 2, 2004

03-Pla-80-62.8/R89.7  
03-1A8014  
ACIM-080-4(175)145E

Addendum No. 2

Dear Contractor:

This addendum is being issued to the contract for construction on State highway in PLACER COUNTY FROM MAGRA OVERHEAD TO 0.5 KM WEST OF CARPENTER FLAT UNDERCROSSING.

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 April 21, 2004.

This addendum is being issued to revise the Project Plans, the Notice to Contractors and Special Provisions, the Proposal and Contract, and the Federal Minimum Wages with Modification Number 4 dated 4-2-04.

Project Plan Sheets 6, 26, 27, 34, 36, 38, 79, 104, 105, 106, 107, 108, 109, 114, 115, 118, 122, 123, 124, 125, 126, 127, 131, 132, 133, 134, 135, 136, 137, 138, 139, 141, 145, 147, 148, 149, 151, 153, 154, 155, 156, 337, 338, 374, 375, 377, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 469, 470, 471, 472, 475, 509, 510, 511, 512, and 513 are revised. Half-sized copies of the revised sheets are attached for substitution for the like-numbered sheets.

In the Notice to Contractor, on the second page after the first paragraph, add the following:

"Cross sections for this project are available at the office of the District Director of Transportation of the district in which the work is situated in paper copy format."

In the Special Provisions, Section 4, "BEGINNING OF WORK, TIME OF COMPLETION AND LIQUIDATED DAMAGES," subsection "INTERNAL TIME OF COMPLETION", the last paragraph is deleted.

In the Special Provisions, Section 8-1.03, "STATE FURNISHED MATERIALS," subsection C, Items 1 and 2 are revised as follows:

- "1. 4,500 tonnes 37.5 mm aggregate
2. 27,000 tonnes 25.4 mm aggregate"

03-Pla-80-62.8/R89.7  
03-1A8014  
ACIM-080-4(175)145E

In the Special Provisions, Section 8-1.03, "STATE FURNISHED MATERIALS," the following subsections are added:

"G. One 10-100 Ethernet Switches  
H. LED modules for Flashing Beacon"

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

"The first order of work shall be to obtain all required permits for PCC paving and operations related to the PCC paving process".

In the Special Provisions, Section 10-1.01, "ORDER OF WORK," the sixth paragraph is deleted.

In the Special Provisions, Section 10-1.11, "MAINTAINING TRAFFIC," the second paragraph is revised as follows:

"The Contractor shall complete temporary AC ramps at the westbound off-ramp and on-ramps at Baxter OC allowing public traffic use for detouring when required. The off-ramp at Baxter OC shall be completed before the on-ramp. After completing these temporary AC ramps at the aforementioned locations. The Contractor shall move to Alta Road UC and complete the temporary AC ramp at the westbound off-ramp. Next the Contractor shall move to Drum Forebay and begin PCC paving as shown in Stage 2 of the Stage Construction Traffic Handling Plans. All final PCC paving of ramps from Baxter OC to Alta Road UC shall be completed in the construction year 2005 unless otherwise directed by the Engineer."

In the Special Provisions, Section 10-1.11, "MAINTAINING TRAFFIC," the third paragraph, the last sentence is deleted.

In the Special Provisions, Section 10-1.11, "MAINTAINING TRAFFIC," Chart No. 16 and Chart No. 17 are added as attached.

In the Special Provisions, Section 10-1.13, "CONSTRUCTION ZONE ENHANCED ENFORCEMENT," the third paragraph is deleted.

In the Special Provisions, Section 10-1.18, "TEMPORARY OBJECT MARKER," subsection "TEMPORARY TERMINAL SYSTEM (TYPE SRT)," is deleted:

In the Special Provisions, Section 10-1.185, "TEMPORARY TERMINAL SYSTEM (TYPE SRT)," is added as attached.

In the Special Provisions, Section 10-1.23, "EXISTING HIGHWAY FACILITIES," subsection "REMOVE ASPHALT CONCRETE OVERSIDE DRAIN," the second paragraph is revised as follows:

"Asphalt concrete overside drains shall be not be removed until their use is no longer required. The Contractor shall notify the Engineer 3 working days in advance of any intended overside drain removal."

03-Pla-80-62.8/R89.7  
03-1A8014  
ACIM-080-4(175)145E

In the Special Provisions, Section 10-1.23, "EXISTING HIGHWAY FACILITIES," the following subsection is added after the third paragraph:

**"RECONSTRUCT METAL BEAM GUARD RAILING**

Extra long posts (2.62 meters) may be required at locations throughout the project. Full compensation for extra long posts shall be considered as included in the contract price paid per meter for reconstruct metal beam guard railing and no additional compensation will be allowed therefor."

In the Special Provisions, Section 10-1.24, "SCREEN ARRESTOR BED AGGREGATE," subsection "CURED-IN-PLACE PIPE (CIPP) LINER," is replaced as attached.

In the Special Provisions, Section 10-1.40, "CONCRETE PAVEMENT," subsection "PROFILE INDEX," the seventh paragraph is replaced as follows:

"Residue from grinding operations shall be picked up by means of a vacuum attachment to the grinding equipment and shall not be permitted to flow across the pavement, flow into gutters or drainage facilities, or be left on the surface of the pavement. Residue shall be removed from pavement surfaces immediately before such residue is blown by action of traffic or wind.

Residue from grinding operations shall be immediately removed from the site of work and disposed of as provided in Section 7-1.13, "DISPOSAL OF MATERIAL OUTSIDE THE HIGHWAY RIGHT OF WAY," of the Standard Specifications.

The use of holding pits within State Right of Way for temporary storage of grinding residue will not be allowed. Any temporary storage of grinding residue within State Right of Way proposed by the Contractor shall be subject to the Engineer's written approval. The Contractor shall submit a Temporary Grinding Residue Storage Plan to the Engineer 20 working days prior to any anticipated temporary grinding residue storage within State Right of Way. The approved Temporary Grinding Residue Storage Plan shall also comply with the Contractor's SWPPP or by SWPPP Amendment as specified under Section 10-1.05, "WATER POLLUTION CONTROL," and in accordance with Section 5-1.18, "RELATIONS WITH CALIFORNIA REGIONAL WATER QUALITY CONTROL," of these special provisions.

The Contractor may elect to dispose of the residue from grinding operations at one of the locations listed in the "Materials Information" available to the Contractor."

In the Special Provisions, Section 10-1.40, "CONCRETE PAVEMENT," subsection "MEASUREMENT AND PAYMENT," the fourth paragraph is revised as follows:

"Constant thickness concrete pavement, as shown on the plans, for structural sections 1, 2 and 3 will be measured by the cubic meter in conformance with the provisions in Section 40-1.13, "Measurement," of the Standard Specifications. No deduction will be made for the volume of epoxy-coated dowel bars, epoxy-coated tie bars and, when used, tie bar assemblies or chairs with fasteners and dowel assemblies with fasteners, in the concrete pavement. When a test strip conforms to the specifications for concrete pavement and remains a part of the project paving surface, the concrete will be measured and paid for as concrete pavement.

Variable thickness concrete pavement, as shown on the plans, for structural sections 4, 7 and 9 will be measured by the cubic meter determined from the actual depth measurements taken between the grade established by the Engineer and the existing asphalt concrete layer shown on the plans. These measurements will be taken during the PCC paving operations and no additional compensation will be allowed to the Contractor for any pavement constructed in excess of the thickness requirements of the plans and specifications and the grade established by the Engineer. Section 40-1.13, "Measurement," of the Standard Specifications shall not apply to variable thickness concrete pavement."

03-Pla-80-62.8/R89.7  
03-1A8014  
ACIM-080-4(175)145E

In the Special Provisions, Section 10-1.40, "CONCRETE PAVEMENT," subsection "MEASUREMENT AND PAYMENT," the fifth paragraph is revised as follows:

"The contract price paid per cubic meter for concrete pavement shall include full compensation for furnishing all labor, materials (including cementitious material in the amount determined by the Contractor), tools, equipment, and incidentals, and for doing all the work involved in constructing the portland cement concrete pavement complete in place, including furnishing and placing epoxy-coated dowel bars, epoxy-coated tie bars and, when used, any tie bar assemblies or chairs and dowel assemblies with fasteners, submittal to the Engineer all test data for determination of mix proportions of concrete for concrete pavement and for providing the facility, Contractor personnel and all the work involved in arranging and holding the prepaving conference, for constructing and repairing all joints; for performing all profile checks for Profile Index and furnishing copies of all profilograms to the Engineer as soon as they are completed; for grooving and grinding, for grinding residue removal and disposal required for final finishing; and for removing, and replacing pavement for deficient thickness, 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 10-1.42, "SHOULDER RUMBLE STRIP (PORTLAND CEMENT CONCRETE, GROUND-IN INDENTATIONS)," the fifth and sixth paragraphs are revised as follows:

"Residue from grinding operations shall be picked up by means of a vacuum attachment to the grinding equipment and shall not be permitted to flow across the pavement, flow into gutters or drainage facilities, or be left on the surface of the pavement. Residue shall be removed from pavement surfaces immediately before such residue is blown by action of traffic or wind.

Residue from grinding operations shall be immediately removed from the site of work and disposed of as provided in Section 7-1.13, "DISPOSAL OF MATERIAL OUTSIDE THE HIGHWAY RIGHT OF WAY," of the Standard Specifications.

The use of holding pits within State Right of Way for temporary storage of grinding residue will not be allowed. Any temporary storage of grinding residue within State Right of Way proposed by the Contractor shall be subject to the Engineer's written approval. The Contractor shall submit a Temporary Grinding Residue Storage Plan to the Engineer 20 working days prior to any anticipated temporary grinding residue storage within State Right of Way. The approved Temporary Grinding Residue Storage Plan shall also comply with the Contractor's SWPPP or by SWPPP Amendment as specified under Section 10-1.05, "Water Pollution Control" and in accordance with Section 5-1.18, "RELATIONS WITH CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD," of these special provisions.

The Contractor may elect to dispose of the residue from grinding operations at one of the locations listed in the "Materials Information" available to the Contractor."

In the Special Provisions, Section 10-1.50, "SEALING JOINTS," the fourth paragraph is deleted.

In the Special Provisions, Section 10-1.70, "THERMOPLASTIC TRAFFIC STRIPE RECESSED," the eleventh paragraph is revised as follows:

"Residue from recessing operations shall be picked up by means of a vacuum attachment to the recessing equipment and shall not be permitted to flow across the pavement, flow into gutters or drainage facilities, or be left on the surface of the pavement. Residue shall be removed from pavement surfaces immediately before such residue is blown by action of traffic or wind.

03-Pla-80-62.8/R89.7  
03-1A8014  
ACIM-080-4(175)145E

Residue from recessing operations shall be immediately removed from the site of work and disposed of as provided in Section 7-1.13, "DISPOSAL OF MATERIAL OUTSIDE THE HIGHWAY RIGHT OF WAY," of the Standard Specifications.

The use of holding pits within State Right of Way for temporary storage of recessing residue will not be allowed. Any temporary storage of recessing residue within State Right of Way proposed by the Contractor shall be subject to the Engineer's written approval. The Contractor shall submit a Temporary Recessing Residue Storage Plan to the Engineer 20 working days prior to any anticipated temporary recessed residue storage within State Right of Way. The approved Temporary Recessing Residue Storage Plan shall also comply with the Contractor's SWPPP or by SWPPP Amendment as specified under Section 10-1.05, "WATER POLLUTION CONTROL," and in accordance with Section 5-1.18, "RELATIONS WITH CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD," of these special provisions.

The Contractor may elect to dispose of the residue from recessing operations at one of the locations listed in the "Materials Information" available to the Contractor."

In the Special Provisions, Section 10-3.01, "DESCRIPTION," the second paragraph is deleted.

In the Special Provisions, Section 10-3.02, "COST BREAK-DOWN," the fourth paragraph and subsections are deleted.

In the Special Provisions, Section 10-3.03, "EQUIPMENT LIST AND DRAWINGS," the third through to the eighth paragraphs are deleted.

In the Special Provisions, Section 10-3.04, "MAINTAINING EXISTING AND TEMPORARY ELECTRICAL SYSTEM," is deleted.

In the Special Provisions, Section 10-3.05, "FOUNDATIONS," the first paragraph is revised as follows:

"Reinforced cast-in-drilled-hole concrete pile foundations for traffic signal and lighting standards shall conform to the provisions in "Piling" of these special provisions.

Foundations for posts, standards and pedestals shall be placed "in the solid" and monolithic. Foundations in sidewalk areas shall be placed to final sidewalk grade prior to the sidewalk being placed and shall be square for posts and standards, and shall be rectangular or square as applicable for controller and pedestal foundations, for the top 100 mm of the foundation.

After each post, standard and pedestal is in proper position, mortar shall be placed under the base plate as shown on the plans."

In the Special Provisions, Section 10-3.07, "CONDUIT," the first paragraph is revised as follows:

"Conduit to be installed underground and in a foundation shall be Type 3 unless otherwise specified."

In the Special Provisions, Section 10-3.07, "CONDUIT," the third paragraph is revised as follows:

"After conductors have been installed, the ends of all conduits shall be sealed with an approved type of sealing compound."

03-Pla-80-62.8/R89.7  
03-1A8014  
ACIM-080-4(175)145E

In the Special Provisions, Section 10-3.07, "CONDUIT," after the fourth paragraph, the following is added as follows:

"Trenching in pavement method will only be allowed in areas which are to receive a pavement overlay."

In the Special Provisions, Section 10-3.07, "CONDUIT," under "FIBER OPTIC CONDUIT," subsection "INTERNAL TRENCH MARKERS" is deleted.

In the Special Provisions, Section 10-3.07, "CONDUIT," under "FIBER OPTIC CONDUIT," subsection "EXTERNAL TRENCH MARKERS" is deleted.

In the Special Provisions, Section 10-3.07, "CONDUIT," under "TRENCH SIZE AND DEPTH," subsection "TRENCHES IN PAVEMENT TO BE OVERLAID WITH NEW SURFACES," is deleted.

In the Special Provisions, Section 10-3.07, "CONDUIT," under "TRENCH SIZE AND DEPTH," subsection "EXTERNAL TRENCH MARKERS" is revised as follows:

"A marker shall be placed at 100 meter increments and at each vault. Markers shall comply with Class 1, Flexible Post Delineators as shown on Standard Plan Sheet A73C. In the reflectorized portion there shall be placed the letters "FO".

The markers shall be placed along the roadway as close as possible to any trench wherever fiber optic conduits have been installed. The warning label shall face the oncoming traffic. The markers shall be not less than 1 meter or more than 3 meters from outside edge of the pavement if the conduits are under the pavement. A marker shall be placed at each vault, within 1 meter of the lid of the vault.

Full compensation for furnishing and installing pull box markers and applying "FO" markings shall be considered as included in the contract lump sum price paid for the fiber optic system and no separate payment will be made therefore."

In the Special Provisions, Section 10-3.08, "PULL BOXES," the first paragraph is deleted.

In the Special Provisions, Section 10-3.08, "PULL BOXES," the third paragraph is revised as follows:

"A pull box marker shall be placed at each pull box not in a concrete surface, Asphalt Concrete surface, or where the pull box is not adjacent to a standard. Markers shall comply with Type K-2 Marker as shown on Standard Plan Sheet A73A except no reflectorization will be required. A State-furnished non-reflective green identification strip shall be applied to each marker."

In the Special Provisions, Section 10-3.08, " PULL BOXES," the following is added to the third paragraph:

"Pull box markers in snow areas shall comply with Type L-2 modified with a snow pole attachment and a 75 mm x 300 mm marker as shown on Standard Plan Sheet A73A and A73B except no reflectorization will be required."

In the Special Provisions, Section 10-3.14, "CONTROLLER CABINETS," the heading is revised to read "TRAFFIC MONITORING STATION CONTROLLER CABINET."

03-Pla-80-62.8/R89.7  
03-1A8014  
ACIM-080-4(175)145E

In the Special Provisions, Section 10-3.14, "CONTROLLER CABINETS," the first sentence of the fourth paragraph is revised as follows:

"Foundations shall conform to the details in the plans for Model 332 and 334 cabinets. The Engineer shall be notified when each 334 cabinet is ready for the functional test."

In the Special Provisions, Section 10-3.15, "DETECTORS," the section is revised to read as follows:

"Loop detector lead-in cable shall be Type B."

In the Special Provisions, Section 10-3.18, "EXTINGUISHABLE MESSAGE SIGN (LED)," the heading is revised to read "EXTINGUISHABLE MESSAGE SIGN."

In the Special Provisions, Section 10-3.19, "HIGHWAY ADVISORY RADIO," the first paragraph is revised as follows:

"The highway advisory radio (HAR) system work shall consist of materials and labor needed to relocate the existing HAR antenna onto a new wood pole with a new triad ground system, as specified in these special provisions and as shown on the plans."

In the Special Provisions, Section 10-3.19, "HIGHWAY ADVISORY RADIO," in subsection "ANTENNA," the second paragraph is revised as follows:

"The antenna shall be designed to be mounted on a wood pole as shown on the plans. The length of the antenna shall be tuned for the selected frequency and shall not be less than 3.1 m and not more than 7.6 m. The top of the antenna shall extend from a minimum of 12 m to a maximum of 15 m above ground level."

In the Special Provisions, Section 10-3.19, "HIGHWAY ADVISORY RADIO," subsection "ANTENNA", the ninth paragraph is deleted.

In the Special Provisions, Section 10-3.20, "CLOSED CIRCUIT TELEVISION SYSTEM," subsection "CONNECTORS AND HARNASSES," the sixth paragraph is revised as follows:

"At the camera pole top, the camera multiconductor cable shall be terminated with a PT06A-14-18P Mil-Spec connector. The cable configured as follows:"

In the Special Provisions, Section 10-3.37, "TEMPORARY LIGHTING SYSTEM," subsection "OPERATION", the second paragraph is revised as follows:

"Unless otherwise directed by the Engineer, the system shall be operated during hours of darkness."

In the Special Provisions, Section 10-3.37, "TEMPORARY LIGHTING SYSTEM," subsection "CONDUIT" is deleted.

03-Pla-80-62.8/R89.7  
03-1A8014  
ACIM-080-4(175)145E

In the Special Provisions, Section 10-3.37, "TEMPORARY LIGHTING SYSTEM," subsection "SERVICE", the first paragraph is revised as follows:

"At the option of the Contractor, one of the following methods shall be used to provide power for the TLS:

- A. Obtain commercial power from an existing utility company.
- B. Commercial power with generator backup.
- C. A generator system with an additional generator as a backup."

In the Special Provisions, Section 10-3.37, "TEMPORARY LIGHTING SYSTEM," subsection "COMMERCIAL POWER", after the fifth paragraph, subsections "GENERATOR" and "GENERATOR OPERATION" are added as attached.

In the Special Provisions, Section 10-3.37, "TEMPORARY LIGHTING SYSTEM," subsection "COMMERCIAL POWER," the seventh paragraph is deleted.

In the Special Provisions, Section 10-3.375, "REMOVING, REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT," is added as follows:

**"10-3.375 REMOVING, REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT**

Salvaged electrical materials shall be hauled to an area designated by the Engineer within 60 km of the project and stockpiled.

The Contractor shall provide the equipment, as necessary, to safely unload and stockpile the material. A minimum of 2 working days' notice shall be given prior to delivery."

In the Special Provisions, Section 10-3.38, "PAYMENT," is revised as attached.

In the Special Provisions, Section 10-4, "HIGHWAY ADVISORY RADIO SYSTEM," is deleted.

In the Special Provisions, Section 10-5, "FIBER OPTIC SYSTEM," is deleted.

In the Special Provisions, Section 10-6, "CLOSED CIRCUIT TELEVISION SYSTEM," is deleted.

In the Special Provisions, Section 10-7, "COMMUNICATION EQUIPMENT," is deleted.

In the Special Provisions, Section 10-8, "SYSTEM TESTING AND DOCUMENTATION," is deleted.

In the Special Provisions, Section 10-9, "TRAINING FOR FIBER OPTIC OPERATION AND MAINTENANCE," is deleted.

In the Special Provisions, Section 13-1, "RAILROAD RELATIONS AND INSURANCE REQUIREMENTS," is added as attached.

In the Proposal and Contract, the Engineer's Estimate Items 68 and 83 are revised, Items 176 and 177 are added and Items 94, 105, 171 and 172 are deleted as attached.

Addendum No. 2  
Page 9  
April 2, 2004

03-Pla-80-62.8/R89.7  
03-1A8014  
ACIM-080-4(175)145E

To Proposal and Contract book holders:

Replace pages 6, 7, 8 and 11 of the Engineer's Estimate in the Proposal with the attached revised pages 6, 7, 8 and 11 of the Engineer's Estimate. The revised Engineer's Estimate is to be used in the bid.

Attached is a copy of the Informational Handout.

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. A copy of this addendum and the modified wage rates are available for the contractor's use on the Internet Site:

**[http://www.dot.ca.gov/hq/esc/oe/weekly\\_ads/addendum\\_page.html](http://www.dot.ca.gov/hq/esc/oe/weekly_ads/addendum_page.html)**

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

<b>Chart No. 16</b>																								
<b>Multilane and Ramp Lane Requirements</b>																								
Direction: EASTBOUND Location 2: 03-Pla-80-KP 78.1 to KP 84.8 (Drum Forebay OC to Blue Canyon UC)																								
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
Mondays through Thursdays	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Fridays	2	2	2	2	2	2	2	2	2	2														2
Saturdays	2	2	2	2	2	2	2	2											2	2	2	2	2	2
Sundays	2	2	2	2	2	2	2	2	2	2									2	2	2	2	2	2
Day before designated legal holiday & designated legal holidays																								
Legend:																								
<input type="checkbox"/> 2 Two lanes open in direction of travel.																								
<input type="checkbox"/> No closure allowed.																								
<b>REMARKS: THIS CHART FOR ALL WORK WHEN MEDIAN CROSS-OVER IS NOT IN EFFECT.</b> Where three Lanes are normally available. Ramp closure allowed during lane closure.																								

<b>Chart No. 17</b>																								
<b>Multilane and Ramp Lane Requirements</b>																								
Direction: EASTBOUND Location 2: 03-Pla-80-KP 84.8 to KP 90.2 (Blue Canyon UC to Carpenter Flat UC)																								
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
Mondays through Wednesdays	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Thursdays	1	1	1	1	1	1	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
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									1	1	1	1	1	1
Day before designated legal holiday & designated legal holidays																								
Legend:																								
<input type="checkbox"/> 1 One lane, a minimum of 3.6 m wide, shall be open in direction of travel.																								
<input type="checkbox"/> No closure allowed.																								
<b>REMARKS: THIS CHART FOR ALL WORK WHEN MEDIAN CROSS-OVER IS NOT IN EFFECT.</b> Where two Lanes are normally available. Ramp closure allowed during lane closure.																								

#### **10-1.185 TEMPORARY TERMINAL SYSTEM (TYPE SRT)**

Temporary terminal system (Type SRT) shall be furnished, installed and removed in conformance with the provisions in Section 83-1, "Railings," of the Standard Specifications and these special provisions.

Attention is directed to "Order of Work" of these special provisions.

Line posts and blocks shall be wood.

Temporary terminal system (Type SRT) shall be a SRT-350 Slotted Rail Terminal (8 post system) as manufactured by Trinity Industries, Inc., and shall include all the items detailed for terminal system (Type SRT) shown on the plans.

The 5 mm x 44 mm x 75 mm plate washer shown on the elevation view and in Section D-D at Wood Post No. 1 shall be omitted.

Arrangements have been made to insure that any successful bidder can obtain the SRT-350 Slotted Rail Terminal (8 post system) from the manufacturer, Trinity Industries, Inc., P.O. Box 99, 950 West 400S, Centerville, UT 84014, Telephone 1-800-772-7976. The price quoted by the manufacturer for the SRT-350 Slotted Rail Terminal (8 post system), FOB Centerville, Utah is \$845.00, not including sales tax.

The above price will be firm for orders placed on or before December 31, 2003, provided delivery is accepted within 90 days after the order is placed.

The Contractor shall provide the Engineer with a Certificate of Compliance from the manufacturer in conformance with the provisions in Section 6-1.07, "Certificates of Compliance," of the Standard Specifications. The Certificate of Compliance shall certify that terminal systems (Type SRT) conform to the contract plans and specifications, conform to the prequalified design and material requirements and were manufactured in conformance with the approved quality control program.

The temporary terminal system (Type SRT) shall be installed in conformance with the manufacturer's installation instructions and these requirements. The steel foundation tubes with soil plates attached, shall be, at the Contractor's option, either driven, with or without pilot holes, or placed in drilled holes. Space around the steel foundation tubes shall be backfilled with selected earth, free of rock, placed in layers approximately 100 mm thick and each layer shall be moistened and thoroughly compacted. Wood terminal posts shall be inserted into the steel foundation tubes by hand. Before the wood terminal posts are inserted, the inside surfaces of the steel foundation tubes to receive the wood posts shall be coated with a grease which will not melt or run at a temperature of 65°C or less. The edges of the wood terminal posts may be slightly rounded to facilitate insertion of the post into the steel foundation tubes.

Surplus excavated material remaining after the temporary terminal system (Type SRT) has been constructed shall be disposed of in a uniform manner along the adjacent roadway where designated by the Engineer.

When no longer required, as determined by the Engineer, temporary terminal systems (Type SRT) shall be removed and disposed of outside the highway right of way in accordance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications or, at the Contractor's option, may be used as terminal system (Type SRT) on the project as long as it is not damaged.

Temporary terminal system (Type SRT) will be measured and paid for in the same manner specified for terminal system (Type SRT) in Section 83 of the Standard Specifications.

Full compensation for removing and disposing of the temporary terminal systems (Type SRT) shall be considered as included in the contract unit price paid for temporary terminal system (Type SRT) and no additional compensation will be allowed therefor.

## **CURED-IN-PLACE PIPE (CIPP) LINER**

Cured-in-place pipe liner shall be furnished and installed in host pipes at the locations shown on the plans, in conformance with the details shown on the plans, and as specified in the Standard Specifications and these special provisions. The Contractor's work shall also be in conformance with ASTM Designations D 5813, and F 1216 or F 1743, and with manufacturer's specifications and working parameters. The work shall consist of lining a host pipe with a thermosetting resin-impregnated flexible fabric tube.

### **Installation**

At the option of the Contractor one of the following installation methods shall be used:

- A. Inversion process in compliance with ASTM Designation F 1216: the tube is installed using a hydrostatic head or air pressure, or,
- B. Pulled-in-place installation in compliance with ASTM Designation F 1743: the tube is pulled into place using a power winch or equivalent as approved by the Engineer, then inflated by hydrostatic head or air pressure.

### **Water Pollution Control**

Attention is directed to Section 7-1.01 G, "Water Pollution", of the Standard Specifications and "Water Pollution Control" of these special provisions regarding handling and disposal of wastewater generated by the work performed under this item. Wastewater discharges resulting from either the inversion or curing processes shall not be allowed to enter the waterway and shall be disposed of outside the highway right of way in accordance with Section 7-1.13, "Disposal of Material Outside the Highway Right of Way", of the Standard Specifications.

### **Man-Entry**

Where man-entry of either the host pipe or CIPP liner is to be done, such man-entry shall be in conformance with the California Code of Regulations Title 8, Section 8422, "Tunnel Classifications".

### **Flow Diversion**

The Contractor shall provide for the control and diversion of flows in host pipes being rehabilitated. The bypass system shall be of adequate capacity and size to handle the flow. Prior to beginning any flow diversion work, the Contractor shall submit a plan showing the intended work, any calculations supporting the sizing of the system and a schedule indicating the duration of the flow diversion to the Engineer for approval.

### **Manufacturer's Authorization**

Prior to beginning any CIPP liner work, the Contractor shall submit documentation to the Engineer certifying that individuals overseeing or performing the installation have successfully performed CIPP liner work on at least three prior independent installations for others, or have been approved by the CIPP liner manufacturer for performing such work.

### **Manufacturer's Specific Material Working Parameters and Contractor Submittal Data**

Prior to beginning any CIPP liner work, the Contractor shall submit the following documentation to the Engineer:

#### **Material Safety Data Sheets**

**Tube and Resin Manufacturer's technical, product, installation and repair data** – including complete physical properties of the CIPP. Spot repair recommendations suitable for various types of localized area failures shall be provided. To verify past performance, the Contractor shall submit a minimum of 5 test results from previous field installations of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the physical properties specified in this specification have been achieved in previous applications.

**Required pressures** – the minimum pressure required to hold the tube tight against the existing conduit and the maximum allowable pressure so as not to damage the tube.

**Lubricants** – confirmation of whether a lubricant is recommended for each installation and the specific lubricant(s) that may be used.

**(If curing by circulating heated water)** - Required pressure, water cure temperature, post-cure temperature and the time period to hold the post-cure temperature.

**(If curing by steam)** – The required pressure, temperature to be held within the line during the cure period, the post-cure temperature and the time period to hold the post-cure temperature.

### **CIPP Design Calculations**

Classification of CIPP unless otherwise specified on the plans is Type II (partially deteriorated) as defined in ASTM D 5813 and in Appendix X1.1.1 of ASTM F 1216. The CIPP liner shall be designed as per Appendix X1.2.1 of ASTM F 1216. Ovality shall be assumed at 5% and groundwater at ½ pipe depth at highway centerline. The CIPP design shall assume no bonding to the original pipe wall. Calculations determining the proposed CIPP liner thickness at each location shall be provided to the Engineer before liner installation.

### **Flow Diversion Plan and Calculations**

See “Flow Diversion”

### **Post-Inspection Written Proposal for Lining**

See “Pre-lining remediation”

### **Cleaning**

The host pipe and all adjoining appurtenances (i.e., drainage inlets) necessary to access the host pipe to be lined shall be cleaned (using hydraulically powered equipment, high-velocity jet cleaners, mechanically powered equipment, or as approved by the Engineer) prior to installation of the CIPP liner. All roots, sediment and debris shall be removed from the pipe. Any damage to the host pipe resulting from the Contractor’s cleaning or other operations shall be repaired by the Contractor at his expense.

Removal of obstructions, as determined by the Engineer, that cannot be removed by conventional equipment and cleaners will be measured and paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

### **Host pipe inspection**

Experienced personnel trained in locating breaks and obstacles by closed-circuit television (CCTV) shall perform inspection of the host pipe. The Contractor shall record and document the location of conditions that may prevent proper installation of the impregnated tube, such as protruding lateral connections, collapsed or crushed pipe or reductions in the cross sectional area. Exact location, position and size of any lateral connections shall be documented. Drainage system identification, distance into host pipe and date shall be clearly visible on the recorded video. Accuracy of the distance meter used in CCTV inspection shall be checked by use of a walking meter, roll-a-tape or other suitable device to the satisfaction of the Engineer. In no case shall the recorded inspection be performed at a rate greater than 9 meters per minute. During the inspection, the Contractor shall review, log and comment on any conditions that will require attention before or after installation of the CIPP liner. A CCTV recording shall be made of the inspection in VHS format for the entire length of the host pipe and a copy of the recording shall be provided to the Engineer.

### **Pre-lining remediation**

After inspection of the host pipe, the Contractor shall develop and provide to the Engineer a written proposal describing the planned operations to repair the pipe. At a minimum, the proposal shall describe conditions found that may prevent proper installation of the resin-impregnated tube (such as any sharp or protruding appurtenances that could snag or tear the liner), and methods proposed by the Contractor for correction of the conditions and lateral pipe re-establishment. In addition, the proposal shall describe perforations of the host pipe to be lined, their extent, and methods proposed for correction by the Contractor, including necessary application of cement mortar and backfilling. Perforations in the host pipe and voids created therefrom with a depth greater than 25 mm shall be patched with cement mortar conforming to the requirements of Section 51-1.135 of the Standard Specifications. The mortar shall be placed so as to conform to the interior dimensions of the host pipe.

The proposal shall also describe the Contractor's proposed procedures and schedules for installing the pipe liner and shall accompany the VHS format inspection recording required above. The Contractor shall obtain the approval of the Engineer prior to beginning any repair or lining work.

Any work necessary, as determined by the Engineer, to repair the host prior to CIPP lining, unless addressed elsewhere in these special provisions will be measured and paid for as extra work as provided in Section 4-1.03D of the Standard Specifications.

### **Fabric Tube, Resin and Impregnation**

As part of the submittal process, the Contractor shall furnish pipe liner and resin manufacturer's technical, product and installation data, including complete physical properties of pipe liner and certification that the resin and catalyst system to be furnished will meet intended service conditions as outlined in "CIPP Design Calculations" above. CIPP formation shall be in conformance with ASTM Designations D 5813 and F 1216 or F 1743.

Attention is directed to Section 5-1.08, "Inspection," of the Standard Specifications. The Contractor shall notify the Engineer in writing not less than 2 working days in advance of starting impregnation procedures. The Contractor shall designate the locations where pipe liner will be resin impregnated.

Any particular host pipe to be rehabilitated may be bituminous coated. The Contractor shall so inform himself and provide a manufacturer's certification that the combination of materials proposed for CIPP liner installation will cure in the presence of a bituminous coating without contaminating the resin and result in a cured-in-place pipe liner complying with these special provisions.

### **A. Inversion Installation**

#### **Fabric Tube**

The fabric tube shall consist of one or more layers of flexible needled felt or an equivalent non-woven or woven material, or a combination of nonwoven and woven materials capable of carrying resin, withstanding installation pressures and curing temperatures. The tube shall be compatible with the resin system used. The material shall be able to stretch to fit irregular pipe sections and negotiate bends. The outside layer of the tube shall be plastic coated with a material that is compatible with the resin system used. The tube shall be fabricated to a size that, when installed, will tightly fit the internal circumference and the length of the host conduit. Allowance shall be made for circumferential stretching during inversion.

#### **Resin**

The resin shall be a chemically resistant isophthalic based polyester, or a vinyl ester thermosetting resin and catalyst system, or an unsaturated, styrene-based, thermosetting resin and catalyst system, or an epoxy resin and hardener. The resin shall be compatible with the installation process. The resin shall be able to cure in the presence or absence of water and the initiation temperature for cure shall be less than 83° C. The approved resin shall meet the chemical resistance test requirements in accordance with ASTM F 1216, Appendix X2.

#### **Resin Impregnation**

At the time of resin impregnation, the entire fabric tube shall be inspected for defects. Also, the opacity of the plastic coating shall not interfere with visual inspection. The tube shall be vacuum-impregnated with resin (wet-out) under controlled conditions. The volume of resin used shall be sufficient to fill all voids in the tube material at nominal thickness and diameter. The volume shall be adjusted by adding 3% to 15% excess resin for the change in resin volume due to polymerization and to allow for any migration of resin into the cracks and joints in the host pipe.

#### **Using Hydrostatic Head**

The wet-out tube shall be inserted through an approved access by means of an inversion process and the application of a hydrostatic head sufficient to fully extend it to the designated termination point. The tube shall be inserted into the vertical inversion standpipe with the impermeable plastic membrane side out. At the lower end of the inversion standpipe, the tube shall be turned inside out and attached to the standpipe so that a leakproof seal is created. The inversion head shall be adjusted to be of sufficient height to cause the impregnated tube to invert from point of inversion to point of termination and hold the tube tight to the pipe wall, producing dimples at side connections. Care shall be taken during the inversion so as not to over-stress the felt fiber. Any damage occurring to the resin-impregnated fabric tube during installation shall be repaired according to manufacturer's recommendations provided in the submittals and as approved by the Engineer.

An alternative method of installation is a top inversion. In this case the tube is attached to a top ring and is inverted to form a standpipe from the tube itself. Any other method of inversion shall be presented to the Engineer for approval before proceeding.

### **Using Air Pressure**

The wet-out tube shall be inserted through an approved access by means of an inversion process and the application of air pressure sufficient to fully extend it to the termination point. The tube shall be connected by an attachment at the upper end of the guide chute so that a leakproof seal is created and with the impermeable plastic membrane side out. The inversion air pressure shall be adjusted to be of sufficient pressure to cause the impregnated tube to invert from point of inversion to point of termination and hold the tube tight to the pipe wall, producing dimples at side connections. Care shall be taken during the inversion so as not to over-stress the woven or non-woven materials.

### **Required Pressures**

Before the inversion begins, the tube manufacturer shall provide the minimum pressure required to hold the tube tight against the existing conduit, and the maximum allowable pressure so as not to damage the tube. Once the inversion process has started, the pressure shall be maintained between the minimum and maximum pressures (provided by the manufacturer) until the inversion has been completed. Should the pressure deviate from within the range of the minimum and maximum pressures, the installed tube shall be removed from the existing conduit.

### **Lubrication**

The use of a lubricant during inversion is recommended to reduce friction during inversion. This lubricant shall be poured into the inversion water in the downtube or applied directly to the tube. The lubricant used shall be a non-toxic oil-based product that has no detrimental effects on the tube, resin or boiler and pump system, will not support the growth of bacteria, and will not adversely affect the fluid to be transported.

## **B. Pulled-in-Place Installation**

### **Fabric Tube**

The tube shall consist of one or more layers of flexible needled felt or an equivalent non-woven or woven material, or a combination of non-woven and woven materials capable of carrying resin, and withstanding installation pressures and curing temperatures. The tube shall be compatible with the resin system used and be able to stretch to fit irregular pipe sections and negotiate bends. Longitudinal and circumferential joints between multiple layers of fabric shall be staggered so as not to overlap. The outside layer of the tube shall have an impermeable flexible coating to contain the resin during and after fabric tube impregnation. The outer coating must facilitate monitoring of resin saturation of the fabric tube. The tube shall be fabricated to a size that, when installed, will tightly fit the internal circumference and the length of the original conduit. Allowance shall be made for circumferential and longitudinal stretching during installation. The minimum tensile strength in the longitudinal and transverse directions shall be 5 Mpa in accordance with ASTM D1682 test methods.

### **Calibration Hose**

Either a removable calibration hose or a permanent calibration hose may be used in the pulled-in-place installation:

- A. Removable calibration hose: The removable calibration hose shall consist of an impermeable plastic, or impermeable plastic coating(s) on flexible woven or non-woven material(s), or both, that do not absorb resin and are capable of being removed from the cured-in-place pipe.
- B. Permanent calibration hose: The permanent calibration hose shall consist of an impermeable plastic coating on a flexible needled felt or equivalent woven or non-woven material(s), or both, that are capable of absorbing resin and are of a thickness to become fully saturated with resin. The calibration hose shall be translucent to facilitate post-installation inspection. The calibration hose shall be fabricated to a size that, when installed, will tightly fit the internal circumference and the length of the resin saturated fabric tube. Allowance shall be made for circumferential and longitudinal stretching during installation. The calibration hose shall become a part of the fabric tube, and once properly cured, shall bond permanently with the fabric tube. The minimum tensile strength in the longitudinal and transverse directions shall be 5 Mpa in accordance with ASTM D 1682 test methods.

### **Resin**

The resin shall be a chemically resistant isophthalic based polyester, or a vinyl ester thermosetting resin and catalyst system, or an unsaturated, styrene-based, thermosetting resin and catalyst system, or an epoxy resin and hardener. The resin shall be compatible with the installation process. The resin shall be able to cure in the presence or absence of water and the initiation temperature for cure shall be less than 83° C. The approved resin shall meet the chemical resistance test requirements in accordance with ASTM F 1216, Appendix X2.

### **Resin Impregnation**

The fabric tube shall be totally impregnated with resin and run through a set of rollers separated by a space, calibrated under controlled conditions to ensure proper distribution of resin. The volume of resin used shall be sufficient to fully saturate all the voids of the fabric tube material (as well as all resin-absorbing material of the calibration hose if applicable) at nominal thickness and diameter. The volume shall be adjusted by adding between 3 to 15 percent excess resin to allow for the change in resin volume due to polymerization, the change in resin volume due to thermal expansion or contraction, and resin migration through the fabric tube.

### **Resin-Impregnated Tube Perforation**

Prior to installation by the pulled-in-place method, the outer impermeable plastic coating of the resin-impregnated fabric tube may be perforated at the option of the Contractor according to these special provisions. After impregnation of the fabric tube, the perforations shall be made with a perforating roller device at the point of manufacture or at the job site. Perforations shall be made on both sides of the lay-flat fabric tube covering the full circumference with spacing no less than 38 mm apart. Perforating slits shall be a minimum of 6.4 mm long.

### **Pulling Resin-Impregnated Tube into Position**

The resin-impregnated tube shall be pulled into place using a power winch, or by an equivalent method as approved by the Engineer. The saturated tube shall fully extend to the designated termination point. Care shall be exercised so as not to damage the tube as a result of friction during pull-in, especially where curvilinear alignments, multilinear alignments, multiple offsets, protruding lateral connections and other friction-producing host-pipe conditions are present.

No resin shall be lost by contact with existing walls of the access or host pipe during installation. The resin shall not be contaminated or diluted by exposure to dirt, debris, or water. Any damage occurring to the resin-impregnated fabric tube during installation shall be repaired according to manufacturer's recommendations as provided in the submittals, and as approved by the Engineer.

Once the fabric tube is in place, it shall be attached to a vertical standpipe so that the calibration tube can be inverted into the center of the resin-impregnated fabric tube. The vertical standpipe shall be of sufficient height of water head to hold the fabric tube tight against the host pipe wall, producing dimples at lateral connections. A device such as a dynamometer or load cell shall be provided on the winch or cable to monitor the pulling force. The overall elongation of the fabric tube after pull-in completion shall not exceed 5% of the overall length measured after the calibration hose has been installed, nor shall the recommended pulling force be exceeded.

### **Hydrostatic Head Calibration Hose Inversion**

The calibration hose shall be inserted into the vertical inversion standpipe with the impermeable plastic membrane side out. At the lower end of the inversion standpipe, the calibration hose shall be turned inside out and attached to the standpipe so that a leakproof seal is created. The resin-impregnated fabric tube shall also be attached to the standpipe so that the calibration hose can invert into the center of the resin-impregnated tube. The inversion head shall be adjusted to be of sufficient height of water head to cause the calibration hose to invert from the initial point of inversion to point of termination and hold the resin-impregnated fabric tube tight against the host pipe wall, producing dimples at lateral connections. Care shall be taken during the inversion so as not to over-stress the felt fiber. If so requested by the Engineer, the manufacturer's maximum allowable axial and longitudinal tensile stress for the fabric tube shall be provided prior to commencement of inversion.

An alternative method of installation is a top inversion. In this case the calibration hose and resin-impregnated tube are attached to a top ring. In this case the tube itself forms the standpipe for generation of hydrostatic head. Other methods of installation shall be submitted to the Engineer for consideration and acceptance.

### **Air Pressure Calibration Hose Inversion**

The calibration hose shall be inserted through the guide chute or tube of the pressure containment device in which the calibration hose has been loaded, with the impermeable membrane side out. At the end of the guide chute, the calibration hose shall be turned inside out and attached so that a leakproof seal is created. The resin-impregnated fabric tube shall also be attached to the guide chute so that the calibration hose can invert into the center of the resin-impregnated tube. The inversion air pressure shall be adjusted to be of sufficient pressure to cause the calibration hose to invert from point of inversion to point of termination and hold the resin-impregnated fabric tube tight to the pipe wall, producing dimples at lateral connections. Care shall be taken during the inversion so as not to over-stress the woven and non-woven materials.

## **Curing**

### **Using Circulating Heated Water**

After inversion or pull-in of the resin-impregnated tube is completed, a suitable heat source and water recirculation equipment are required to circulate heated water throughout the pipe. The equipment shall be capable of delivering hot water throughout the section to uniformly raise the water temperature above the temperature required to effect a cure of the resin. Water temperature in the line during the cure period shall be as recommended by the resin manufacturer.

The heat source shall be fitted with suitable monitors to gage the temperature of the incoming and outgoing water supply. Another such gage shall be placed between the resin-impregnated tube and the pipe invert at the termination to determine the temperatures during cure.

Initial cure will occur during temperature heat-up and is completed when exposed portions of the new pipe appear to be hard and sound and the remote temperature sensor indicates that the temperature is of a magnitude to realize an exotherm or cure in the resin. After initial cure is reached, the temperature shall be raised to the post-cure temperature recommended by the manufacturer. The post-cure temperature shall be held for a period as recommended by the resin manufacturer, during which time the recirculation of the water and cycling of the boiler to maintain the temperature continues. The curing of the CIPP must take into account the host pipe material, the resin system and ground conditions (temperature, moisture level, and thermal conductivity of soil).

### **Using Steam**

After inversion or pull-in of the resin-impregnated tube is completed, suitable steam-generating equipment is required to distribute steam throughout the pipe. The equipment shall be capable of delivering steam throughout the section to uniformly raise the temperature above that required to effect a cure of the resin. The temperature in the line during the cure period shall be as recommended by the resin manufacturer.

The steam-generating equipment shall be fitted with suitable monitors to gage the temperature of the outgoing steam. The temperature of the resin being cured shall be monitored by placing gages between the resin-impregnated tube and the host pipe at both ends.

Initial cure will occur during temperature heat-up and is completed when exposed portions of the new pipe appear to be hard and sound and the remote temperature sensor indicates that the temperature is of a magnitude to realize an exotherm or cure in the resin. After initial cure is reached, the temperature shall be raised to the post-cure temperatures recommended by the manufacturer. The post-cure temperature shall be held for a period as recommended by the resin manufacturer, during which time the distribution and control of steam to maintain the temperature continues. The curing of the CIPP must take into account the host pipe material, the resin system and ground conditions (temperature, moisture level, and thermal conductivity of soil).

### **Required Pressures**

Before the curing begins, the pressure required to hold the flexible tube tight against the existing conduit shall be provided by the tube manufacturer. Once the cure has started and dimpling for laterals is completed, the required pressure shall be maintained until the cure is completed. Should the pressure deviate more than 700 mm of water (6.89 KPa) from the required pressure, the installed tube shall be removed from the existing conduit. A continuous log of pressure during cure is required and shall be provided to the Engineer immediately following cure completion. If, at any time during the cure period the Engineer requests to view the log, it shall be made immediately available. A copy of the log shall be provided to the Engineer within 48 hours of CIPP liner cure completion for each installation.

### **Cool-Down**

#### **After Heated Water Cure**

The temperature within the CIPP liner shall be cooled below 38° C before relieving the static head in the inversion standpipe. Cool-down may be accomplished by the introduction of cool water into the inversion standpipe to replace water being drained from a small hole made in the downstream end, within the requirements of the Water Pollution Control conditions of these special provisions. Care shall be taken in the release of the static head so that a vacuum will not be developed that could damage the newly installed CIPP liner.

### After Steam Cure

The temperature within the CIPP liner shall be cooled below 45° C before relieving the internal pressure within the section. Cool-down may be accomplished by the introduction of cool water into the section to replace the mixture of air and steam being drained from a small hole made in the downstream end, within the requirements of the Water Pollution Control conditions of these special provisions. Care shall be taken in the release of the air pressure so that a vacuum will not be developed that could damage the newly installed pipe.

### Lateral Connection Re-establishment

Existing lateral connections shall be re-established to conform to the finished cured-in-place pipe liner. No excavation shall be allowed. Re-establishment of connections shall be performed from the interior of the pipe by a closed circuit television camera and a remote control cutting device or by man entry. Re-established connections shall obtain a minimum of 95 percent and a maximum of 100 percent of the original connection area when entering the host pipe. The connection shall be free from burrs or projections and shall have a smooth and crack-free edge. Where man-entry is possible, the Contractor shall grout the area where the lateral connection enters the lined pipe to produce a watertight seal approved by the Engineer and according to the contractor's submittal. The invert of the lateral connection shall match the bottom of the re-established lateral opening. Lateral connections shall be re-established within 72 hours of the curing process and before lining any additional pipes.

### Finished Liner

The CIPP liner shall comply with ASTM Designation D 5813 and shall have, as a minimum, the following initial structural properties:

Test Description	ASTM Designation	Minimum Value
Flexural Strength	D 790	31 MPa
Flexural Modulus	D 790	1724 MPa
Tensile Strength*	D 638	21 MPa
*pressure pipes only		

The physical properties of the finished CIPP liner shall be verified through a field sampling procedure in accordance with, as appropriate, ASTM Designation F 1216 or ASTM Designation F 1743, and in accordance with ASTM Designation D 5813. The Contractor shall be responsible to obtain field-cured samples for each individual CIPP liner installation, submit them for testing to a certified laboratory, and provide the results to the Engineer within 21 days of cure completion. Samples will be obtained as outlined in ASTM F 1216. The sample referenced in Section 8.1.1 of F 1216 shall be taken from the CIPP liner termination point.

The cured-in-place pipe liner shall be fabricated from materials which when cured, shall be chemically resistant to exposure to sewage gases containing quantities of hydrogen sulfide, carbon monoxide, methane, petroleum hydrocarbons, and saturation with moisture and dilute sulfuric acid.

The bond between CIPP layers shall be strong and uniform. All layers, after cure, must form one homogenous structural pipe wall with no indications that any part of the tube has less than 100% resin saturation. A delamination test shall be performed in accordance with ASTM F-1216 Section 8.4 at 25% of the locations to receive a CIPP liner. These locations will be selected at the discretion of the Engineer.

### Workmanship

The interior of the finished CIPP liner and lateral connections shall be inspected by the Contractor by means of CCTV camera. If man-entry is possible, and CCTV inspection reveals areas that require further inspection due to suspected deficiencies in the CIPP liner, then the Contractor shall perform a more detailed man-entry inspection of the CIPP liner concentrating on the suspected areas. The completed inspections shall document that the installation has been performed in accordance with these specifications. A copy of the inspection report, including videotape, shall be submitted to the Engineer prior to project acceptance of the CIPP liner. Format of the videotape shall be VHS.

If the cured-in-place pipe liner does not conform to the requirements in this special provision as determined by the Engineer, the cured-in-place pipe liner shall be replaced or repaired as directed by the Engineer at the Contractor's expense.

The finished CIPP liner shall be continuous and tight fitting over the entire length of the host pipe and shall be free of concentrated ridges exceeding 3% of the pipe diameter, dry spots, lifts and delaminations. If any of these conditions are present, the Contractor shall remove and replace the CIPP liner in these areas. At the discretion of the Engineer, if the concentrated ridges fall outside the 120-degree invert arc, in lieu of CIPP liner replacement concentrated ridges may be ground to conform to the dimensions of the CIPP liner, provided that the Contractor can demonstrate that the proposed repair does not compromise the structural integrity of the CIPP liner. Concentrated ridge repairs shall be made in conformance with the manufacturer's repair strategies as outlined in the submittal. The remaining surface of the concentrated ridge area shall be coated with a compatible resin approved by the manufacturer. Any residue generated from the grinding operation shall be removed at the end of each day's work and disposed of as outlined in Section 7-1.13 of the Standard Specifications. The tube shall be fabricated to a size that when installed will neatly fit the internal circumference of the host pipe.

Any holes, tears, delaminated areas or defects that would affect the performance of the CIPP liner shall be repaired at the Contractor's expense. Defects that are not repairable will be cause for rejection of the installation. Internal repairs may be made to the CIPP liner in accordance with the manufacturer's recommendations and as approved by the Engineer. Internal repairs may be made using approved fabric and epoxy or epoxy-vinyl ester resins to restore strength and integrity.

If the CIPP liner does not fit tightly against the host pipe at its termination point(s), the space between the liner and host pipe shall be sealed by filling with a resin mixture compatible with the CIPP.

### **Measurement and Payment**

CIPP liner work to be performed under these specifications will be listed in the contract item by size, type, or whatever information is necessary for identification. Full compensation for grinding and re-establishing of connections, cutting, removing, and disposing of a portion of host pipes where CIPP liner is to be installed shall be considered as included in the contract price paid per meter for the various sizes of cured-in-place pipe liner in the Engineer's estimate and no additional compensation will be allowed therefor.

The length of CIPP liner to be paid for will be the slope length as designated on the plans and confirmed by the Engineer. CIPP liner placed in excess of the length designated will not be paid for.

Disconnecting of the existing downdrains towards the downstream end of the host pipe, designated on the plans or encountered in the field, prior to the installation of the pipe liner may be required at some locations. Full compensation for disconnecting and reconnecting the existing downdrain shall be considered as included in the contract price paid per meter for the various sizes of cured-in-place pipe liner in the Engineer's estimate and no additional compensation will be allowed therefor.

The contract price paid per meter for cured-in-place pipe liner shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in furnishing and installing, complete in place, cured-in-place pipe liner. This includes controlling or diverting host pipe flow, providing samples, installing temperature and pressure gauges, repairing defects (except for removal of obstructions that cannot be removed by conventional equipment and cleaners), re-establishment of lateral connections, cleaning of the host pipes and adjoining appurtenances, and closed-circuit inspection as shown on the plans, as specified in the Standard Specifications and these special provisions, as required by ASTM Designations, D 5813 and F 1216 or F 1743, and as directed by the Engineer.

## **GENERATOR**

Generators shall be 120/240-V, 60 Hz, 10 kW minimum, continuous duty type. Generators may be powered by gasoline, LPG or diesel engines operating at approximately 1800 revolutions per minute. Engines shall be provided with automatic oil feed. Generator system shall be equipped to provide automatic start-stop operation, with 12-V starting system. Generator output circuit shall have overcurrent protection with a maximum setting of 40 A or as shown on the plans.

Fuel storage shall be sufficient for periods of time during which the generator system will be operated unattended. Engines shall be equipped with approved spark arresters.

## **GENERATOR OPERATION**

Two generators shall be provided. A single generator shall operate the system. In the event of a failure to supply voltage for the system, the second generator shall start automatically and transfer the system load upon reaching operating voltage.

An automatic transfer switch shall provide the following functions:

- A. Monitor line voltage and, in the event of a power outage, signal the generator to start.
- B. An engine start delay, adjustable from 0 to 6 seconds, to prevent starting if the power outage is only momentary and an engine stop delay, adjustable from 0 to 8 minutes, to allow the generator set to run unloaded to cool prior to shut down.
- C. A transfer delay of 0 to 120 seconds to allow the generator to stabilize before connecting to the load and retransfer delay of 0 to 32 minutes to allow the line voltage to stabilize.
- D. A "Load-No Load" switch to allow test with or without load.
- E. A "Normal-Test" switch that will start and run the generator in the "Test" position. "Normal" position shall return the generator to automatic operation.
- F. A battery charger that is powered by the normal line voltage.
- G. A generator voltage sensor that signals for a transfer when the generator output is ready.

A mechanical interlock shall be provided to prevent application of power to the load from both sources and to prevent backfeeding from the generator to the line.

The automatic transfer switch shall be rated at 100 A, 120/240-V, 3-wire, single-phase and shall be compatible with the generator furnished.

### **10-3.38 PAYMENT**

Full compensation for hauling and stockpiling electrical materials shall be considered as included in the contract price paid for the item requiring the material to be salvaged and no additional compensation will be allowed therefor.

The contract lump sum price paid for extinguishable message sign system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in extinguishable message sign system, complete in place, including extinguishable message sign interconnect, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract lump sum price paid for highway advisory radio system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in highway advisory radio system, including highway advisory radio interconnect, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract lump sum price paid for fiber optic system shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in fiber optic system, complete in place, including training for fiber optic operation and maintenance, system testing and documentation, system documentation, changeable message sign/traffic monitoring station interconnect, transportation management center (TMC) equipment, Traffic management workstation, communication hub as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for adjust pull box shall be considered as included in the contract lump sum price paid for modify lighting and sign illumination and no separate payment will be made therefor.

Full compensation for modifying the existing cabinet for extinguishable message sign system, changeable message sign system and traffic monitoring stations for the installation of the fiber optic conduit and cables shall be considered as included in the contract lump sum price paid for fiber optic system and no separate payment will be made therefor.

Full compensation for temporary lighting system shall be considered as included in the contract lump sum price paid for modify lighting and sign illumination and no separate payment will be made therefor.

Full compensation for roadway weather information system interconnect shall be considered as included in the contract lump sum price paid for fiber optic system and no separate payment will be made therefor.

## **EXHIBIT "C"**

### **SECTION 13. RAILROAD RELATIONS AND INSURANCE REQUIREMENTS**

#### **13-1.01 GENERAL**

The term "Railroad" shall mean the Union Pacific Railroad Company.

It is expected that the Railroad will cooperate with the Contractor to the end that the work may be handled in an efficient manner. However, except for the additional compensation provided for hereinafter for delays in completion of specific unit of work to be performed by the Railroad, and except as provided in Public Contracts Code Section 7102, the Contractor shall have no claim for damages, extension of time, or extra compensation in the event his work is held up by work performed by the Railroad.

The Contractor must understand the Contractor's right to enter Railroad's property is subject to the absolute right of Railroad to cause the Contractor's work on Railroad's property to cease if, in the opinion of Railroad, Contractor's activities create a hazard to Railroad's property, employees, and operations.

The Contractor shall sign and submit to the Railroad the Contractor's Endorsement, in the form attached hereto.

#### **13-1.02 RAILROAD REQUIREMENTS**

The Contractor shall notify Mr. Jim Smith, Manager Industry and Public Projects, 10031 Foothills Blvd., Roseville, CA 95678, Telephone (916) 789-6352, and the Engineer, in writing, at least 10 working days before performing any work on, or adjacent to the property or tracks of the Railroad.

The Contractor shall cooperate with the Railroad where work is over or under the tracks, or within the limits of Railroad property, to expedite the work and avoid interference with the operation of railroad equipment.

The Contractor shall comply with the rules and regulations of Railroad or the instructions of its representatives in relation to protecting the tracks and property of Railroad and the traffic moving on such tracks, as well as the wires, signals and other property of Railroad, its tenants or licensees, at and in the vicinity of the work during the period of construction.

The Contractor shall perform work to not endanger or interfere with the safe operation of the tracks and property of Railroad and traffic moving on such tracks, as well as wires, signals and other property of Railroad, its tenants or licensees, at or in the vicinity of the work.

The Contractor shall take protective measures to keep railroad facilities, including track ballast, free of sand or debris resulting from his operations. Damage to railroad facilities resulting from Contractor's operations will be repaired or replaced by Railroad and the cost of such repairs or replacement shall be deducted from the Contractor's progress and final pay estimates.

The Contractor shall contact the Railroad's "Call Before You Dig" at least 48 hours prior to commencing work, at 1-800-336-9193 (a 24 hour number) to determine location of fiber optics. If a telecommunications system is buried anywhere on or near railroad property, the Contractor will coordinate with the Railroad and the Telecommunication Company(ies) to arrange for relocation or other protection of the system prior to beginning any work on or near Railroad Property.

The Contractor shall not pile or store any materials nor park any equipment closer than 7.62-meter (25'-0") to the centerline of the nearest track, unless directed by Railroad's representative.

The Contractor shall also abide by the following temporary clearances during the course of construction:

- 3.66-meter (12'-0") horizontally from centerline of track
- 6.40-meter (21'-0") vertically above top of rail

The temporary vertical construction clearance above provided will not be permitted until authorized by the Public Utilities Commission. It is anticipated that authorization will be received not later than 15 days after the approval of the contract by the Attorney General. In the event authorization is not received by the time specified, and, if in the opinion of the Engineer, the Contractor's operations are delayed or interfered with by reason of authorization not being received by the said time, the State will compensate the Contractor for such delay to the extent provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications and not otherwise.

Walkways with railing shall be constructed by Contractor over open excavation areas when in close proximity of tracks, and railings shall not be closer than 2.60-meter (8'-6") horizontally from centerline of the nearest track, if tangent, or 2.90-meter (9'-6") if curved.

Infringement on the above temporary construction clearances by the Contractor's operations shall be submitted to the Railroad by the Engineer, and shall not be undertaken until approved by the Railroad, and until the Engineer has obtained any necessary authorization from any governmental body or bodies having jurisdiction thereover. No extension of time or extra compensation will be allowed in the event the Contractor's work is delayed pending Railroad approval and governmental authorization.

When the temporary vertical clearance is less than 6.86-meter (22'-6") above top of rail, Railroad shall have the option of installing tell-tales or other protective devices Railroad deems necessary for protection of Railroad trainmen or rail traffic.

Four sets of plans, in 279mm x 432mm (11" x 17") format, and two sets of calculations showing details of temporary support over the Railroad's tracks and property not included in the contract plans, shall be submitted to the Engineer for review prior to submittal to Railroad for final approval. All plans and calculations shall be prepared and signed by a professional civil engineer registered in the State of California. The review and approval by Railroad may take up to 6 weeks after receipt of all necessary information. No work shall be undertaken until such time as the Railroad has given such approval.

The Contractor shall notify the Engineer in writing, at least 25 calendar days but not more than 40 days in advance of the starting date of installing temporary work with less than permanent clearance at each structure site. The Contractor shall not be permitted to proceed with work across railroad tracks until this requirement has been met. No extension of time or extra compensation will be allowed if the Contractor's work is delayed due to failure to comply with the requirements in this paragraph.

Private crossings at grade over tracks of Railroad for the purpose of hauling earth, rock, paving or other materials will not be permitted. If the Contractor, for the purpose of constructing highway-railway grade separation structures, including construction ramps thereto, desires to move equipment or materials across Railroad's tracks, the Contractor shall first obtain permission from Railroad. Should Railroad approve the crossing, the Contractor shall execute a private crossing agreement. By this agreement, the Contractor shall bear the cost of the crossing surface, with warning devices that might be required. The Contractor shall furnish the Contractor's own employees as flagmen to control movements of vehicles on the private roadway and shall prevent the use of such roadway by unauthorized persons and vehicles.

Blasting will be permitted only when approved by the Railroad.

The Contractor shall, upon completion of the work covered by this contract to be performed by Contractor upon the premises or over or beneath the tracks of Railroad, promptly remove from the premises of Railroad, Contractor's tools, implements and other materials, whether brought upon said premises and cause said premises to be left in a clean and presentable condition.

Under-track pipeline installations shall be constructed in accordance with Railroad's current standards which may be obtained from Railroad. The general guidelines are as follows:

Edges of jacking or boring pit excavations shall be a minimum of 6.10-meter (20 feet) from the centerline of the nearest track.

If the pipe to be installed under the track is 100 mm (4 inches) in diameter or less, the top of the pipe shall be at least 1.067-meter (42 inches) below base of rail.

If the pipe diameter is greater than 100 mm (4 inches) in diameter, it shall be encased and the top of the steel pipe casing shall be at least 1.60-meter (66 inches) below base of rail.

Installation of pipe or conduit under Railroad's tracks shall be done by dry bore and jack method.

Hydraulic jacking or boring will not be permitted. Care is to be exercised so as not to damage any underground facilities of Railroad.

### **13-1.03 PROTECTION OF RAILROAD FACILITIES**

Upon advance notification of not less than 10 working days by the Contractor, Railroad representatives, conductors, flagmen or watchmen will be provided by Railroad to protect its facilities, property and movements of its trains or engines. Notice shall be made to Jim Smith of Railroad at (916) 789-6352. At the time of notification, the Contractor shall provide Railroad with a schedule of dates that flagging services will be needed, as well as times, if outside normal working hours. Subsequent deviation from the schedule shall require 10 working days advance notice from the first affected date. The Railroad will furnish such personnel or other protective devices:

- (a) When any part of any equipment is standing or being operated within 25 feet, measured horizontally, from centerline of any track on which trains may operate, or when any erection or construction activities are in progress within such limits, regardless of elevation above or below track.
- (b) For any excavation below elevation of track subgrade if, in the opinion of Railroad's representative, track or other Railroad facilities may be subject to settlement or movement.
- (c) During any clearing, grubbing, grading or blasting in proximity to Railroad which, in the opinion of Railroad's representative, may endanger Railroad facilities or operations.
- (d) During any of Contractor's operations when, in the opinion of Railroad's representatives, Railroad facilities, including, but not limited to, tracks, buildings, signals, wire lines or pipe lines, may be endangered.

The cost of flagging and inspection provided by Railroad during the period of constructing that portion of the project located on or near Railroad property, as deemed necessary for the protection of Railroad's facilities and trains, will be borne by the State for a period of 10 working days beginning on the date work commences on or near property of Railroad. The Contractor shall pay to the State liquidated damages in the sum of \$500 per day for each day in excess of the above 10 working days the Contractor works on or near Railroad property, and which requires flagging protection of Railroad's facilities and trains.

### **13-1.04 WORK BY RAILROAD**

Railroad will furnish or cause to be furnished as necessary due to construction, labor materials, tools and equipment to perform certain works including relocation of telephone, telegraphy and signal lines and appurtenances and will perform any other work in connection therewith.

The following work by Railroad will be performed by Railroad forces and is not a part of the work under this contract.

- (a) The Railroad will perform preliminary engineering inspection and flagging as specified in Section 13-1.03, "Protection of Railroad Facilities," of these special provisions.

### **13-1.05 DELAYS DUE TO WORK BY RAILROAD**

No delay due to work by the Railroad is anticipated.

If delays due to work by the Railroad occur, and the Contractor sustains loss which, in the opinion of the Engineer, could not have been avoided by the judicious handling of forces, equipment and plant, the amount of said loss shall be determined as provided in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

If a delay due to work by Railroad occurs, an extension of time determined pursuant to the provisions in Section 8-1.07, "Liquidated Damages," of the Standard Specifications will be granted.

### **13-1.06 LEGAL RELATIONS**

The provisions of Section 13-1, "Relations with Railroad Company," and the provisions of Section 13-2, "Railroad Protective Insurance," of these special provisions shall inure directly to the benefit of Railroad.

### **13-2 RAILROAD PROTECTIVE INSURANCE**

The term "Railroad" shall mean the Union Pacific Railroad Company.

In addition to any other form of insurance or bonds required under the terms of the contract and specifications, the Contractor will be required to carry insurance of the kinds and in the amounts hereinafter specified.

Such insurance shall be approved by the Railroad before any work is performed on Railroad's property and shall be carried until all work required to be performed on or adjacent to the Railroad's property under the terms of the contract is satisfactorily completed as determined by the Engineer, and thereafter until all tools, equipment and materials have been removed from Railroad's property and such property is left in a clean and presentable condition.

The insurance herein required shall be obtained by the Contractor, who shall furnish the Railroad with completed certificates, in the form attached hereto, signed by the insurance company or its authorized agent or representative, reflecting the existence of each of the policies required by 1 and 2 below including coverage for X, C and U and completed operations hazards, and the original policy of insurance (or a certified duplicate original policy) required by 3 below, to:

Judy Scott  
Union Pacific Railroad Company  
Insurance Group  
1416 Dodge Street, Room 820  
Omaha, NE 68179

Certificate of insurance shall guarantee that the policy under 1 and 2 will not be amended, altered, modified or canceled insofar as the coverage contemplated hereunder is concerned, without at least thirty (30) days notice mailed by registered mail to the Railroad.

Full compensation for all premiums which the Contractor is required to pay on all the insurance described hereinafter shall be considered as included in the prices paid for the various items of work to be performed under the contract, and no additional allowance will be made therefor or for additional premiums which may be required by extensions of the policies of insurance.

The approximate daily train traffic is 24 freight trains and two passenger trains.

#### **1. Contractor's Public Liability and Property Damage Liability Insurance**

The Contractor shall, with respect to the operations he performs within or adjacent to Railroad's property, carry regular Contractor's Public Liability and Property Damage Liability Insurance providing for the same limits as specified for Railroad's Protective Public Liability and Property Damage Liability insurance to be furnished for and in behalf of Railroad as hereinafter provided.

If any part of the work within or adjacent to Railroad's property is subcontracted, the Contractor in addition to carrying the above insurance shall provide the above insurance on behalf of the subcontractors to cover their operations.

#### **2. Contractor's Protective Public Liability and Property Damage Liability Insurance.**

The Contractor shall, with respect to the operations performed for him by subcontractors who do work within or adjacent to Railroad's property, carry in his own behalf regular Contractor's Protective Public Liability and Property Damage Liability Insurance providing for the same limits as specified for Railroad's Protective Public Liability and Property Damage Liability Insurance to be furnished for and on behalf of Railroad as hereinafter provided.

**3. Railroad's Protective Public Liability and Property  
Damage Liability Insurance**

The Contractor shall, with respect to the operations he performs within or adjacent to Railroad's property or that of any of his subcontractors who do work within or adjacent to Railroad's property perform, have issued and furnished in favor of Railroad, Policy or policies of insurance in the Railroad Protective Liability Form as hereinafter specified.

**Railroad Protective Liability Form**

\_\_\_\_\_  
(Name of Insurance Company)

**DECLARATIONS**

Item 1. Named Insured:

Union Pacific Railroad Company  
1416 Dodge Street - Mail Code 10049  
Omaha, Nebraska 68179

Item 2. Policy Period: From \_\_\_\_\_ to \_\_\_\_\_ 12:01 a.m., Standard Time, at the designated job site as stated herein.

Item 3. The insurance afforded is only with respect to such of the following coverage's as are indicated in Item 6 by specific premium charge or charges. The limit of the company's liability against such coverage or coverage's shall be as stated herein, subject to all the terms of this policy having reference thereto.

Coverage's	Limits of Liability	
	Each Occurrence	Aggregate
A B & C	Bodily Injury Liability Property Damage Liability and Physical Damage to Property	\$2,000,000 Combined Single Limit
		\$6,000,000 for Coverage's A, B & C

Item 4. Name and Address of Contractor:

Item 5. Name and Address of Governmental Authority for whom the work by the Contractor is being performed: State of California, acting by and through its Department of Transportation, P.O. Box 942874, Sacramento, California 94274-0001

Item 6. Designation of the Job Site and Description of Work:

FOR CONSTRUCTION ON \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Premium Bases	Rates per \$100 of Cost		Advance Premiums	
	Coverage A	Coverage's B & C	Coverage A	Coverage's B & C
Contract Cost	\$	\$	\$	\$
Rental Cost	\$	\$	\$	\$

Countersigned \_\_\_\_\_, 20\_\_ by \_\_\_\_\_

\_\_\_\_\_  
Title

**POLICY**

\_\_\_\_\_  
(Name of Insurance Company)

A \_\_\_\_\_ insurance company, herein called the company, agrees with the insured, named in the declarations made a part hereof, in consideration of the payment of the premium and in reliance upon the statements in the declaration made by the named insured and subject to all of the terms of this policy:

**INSURING AGREEMENTS**

**I. Coverage A--Bodily Injury Liability.**

To pay on behalf of the insured all sums which the insured shall become legally obligated to pay as damages because of bodily injury, sickness, or disease, including death at any time resulting therefrom, hereinafter called "bodily injury," either (1) sustained by any person arising out of acts or omissions at the designated job site which are related to or are in connection with the work described in Item 6 of the declarations, or (2) sustained at the designated job site by the Contractor or any employee of the Contractor, or by any employee of the Governmental Authority specified in Item 5 of the Declarations, or by any designated employee of the insured whether or not arising out of such acts or omissions.

**Coverage B--Property Damage Liability.**

To pay on behalf of the insured all sums which the insured shall become legally obligated to pay as damages because of physical injury to or destruction of property, including loss of use of any property due to such injury or destruction, hereinafter called "property damage," arising out of acts or omissions at the designated job site which are related to or are in connection with the work described in Item 6 of the declarations.

### **Coverage C--Physical Damage to Property.**

To pay for direct and accidental loss of or damage to rolling stock and their contents, mechanical construction equipment, or motive power equipment, hereinafter called "loss," arising out of acts or omissions at the designated job site which are related to or are in connection with the work described in Item 6 of the declarations; provided such property is owned by the named insured or is leased or entrusted to the named insured under a lease or trust agreement.

#### **II. Definitions.**

- (a) **Insured.**--The unqualified word "insured" includes the named insured and also includes any executive officer, director or stockholder thereof while acting within the scope of his duties as such.
- (b) **Contractor.**--The word "contractor" means the Contractor designated in Item 4 of the declarations and includes all subcontractors of said Contractor but shall not include the named insured.
- (c) **Designated employee of the insured.**--The words "designated employee of the insured" mean:
  - (1) any supervisory employee of the insured at the job site,
  - (2) any employee of the insured while operating, attached to or engaged on work trains or other railroad equipment at the job site which are assigned exclusively to the Contractor, or
  - (3) any employee of the insured not within (1) or (2) who is specifically loaned or assigned to the work of the Contractor for prevention of accidents or protection of property, the cost of whose services is borne specifically by the Contractor or by governmental authority.
- (d) **Contract.**--The word "contract" means any contract or agreement to carry a person or property for a consideration or any lease, trust or interchange contract or agreement respecting motive power, rolling stock or mechanical construction equipment.

#### **III. Defense, Settlement, Supplementary Payments.**

With respect to such insurance as is afforded by this policy under Coverage's A and B, the company shall:

- (a) defend any suit against the insured alleging such bodily injury or property damage and seeking damages which are payable under the terms of this policy, even if any of the allegations of the suit are groundless, false or fraudulent; but the company may make such investigation and settlement of any claim or suit as it deems expedient;
- (b) pay, in addition to the applicable limits of liability:
  - (1) all expenses incurred by the company, all costs taxed against the insured in any such suit and all interest on the entire amount of any judgment therein which accrues after entry of the judgment and before the company has paid or tendered or deposited in court that part of the judgment which does not exceed the limit of the company's liability thereon;

- (2) Premiums on appeal bonds required in any such suit, premiums on bonds to release attachments for an amount not in excess of the applicable limit of liability of this policy, but without obligation to apply for or furnish any such bonds;
- (3) expenses incurred by the insured for such immediate medical and surgical relief to others as shall be imperative at the time of the occurrence;
- (4) all reasonable expenses, other than loss of earnings, incurred by the insured at the company's request.

#### **IV. Policy Period, Territory.**

This policy applies only to occurrences and losses during the policy period and within the United States of America, its territories or possessions, or Canada.

#### **EXCLUSIONS**

This policy does not apply:

- (a) to liability assumed by the insured under any contract or agreement except a contract as defined herein;
- (b) to bodily injury or property damage caused intentionally by or at the direction of the insured;
- (c) to bodily injury, property damage or loss which occurs after notification to the named insured of the acceptance of the work by the governmental authority, other than bodily injury, property damage or loss resulting from the existence or removal of tools, uninstalled equipment and abandoned or unused materials;
- (d) under Coverage's A(1), B and C, to bodily injury, property damage or loss, the sole proximate cause of which is an act or omission of any insured other than acts or omissions of any designated employee of any insured;
- (e) under Coverage A, to any obligation for which the insured or any carrier as his insurer may be held liable under any workmen's compensation, unemployment compensation or disability benefits law, or under any similar law; provided that the Federal Employers' Liability Act, U.S. Code (1946), Title 45, Sections 51-60, as amended, shall for the purposes of this insurance be deemed not to be any similar law;
- (f) under Coverage B, to injury to or destruction of property (1) owned by the named insured or (2) leased or entrusted to the named insured under a lease or trust agreement.
- (g) 1. Under any liability coverage, to injury, sickness, disease, death or destruction
  - (a) with respect to which an insured under the policy is also an insured under a nuclear energy liability policy issued by Nuclear Energy Liability Insurance Association, Mutual Atomic Energy Liability Underwriters or Nuclear Insurance Association of Canada, or would be an insured under any such policy but for its termination upon exhaustion of its limit of liability; or

(b) resulting from the hazardous properties of nuclear material and with respect to which (1) any person or organization is required to maintain financial protection pursuant to the Atomic Energy Act of 1954, or any law amendatory thereof, or (2) the insured is, or had this policy not been issued would be, entitled to indemnity from the United States of America, or any agency thereof, under any agreement entered into by the United States of America, or any agency thereof, with any person or organization.

2. Under any medical payments coverage, or under any Supplementary Payments provision relating to immediate medical or surgical relief, to expenses incurred with respect to bodily injury, sickness, disease or death resulting from the hazardous properties of nuclear material and arising out of the operation of a nuclear facility by any person or organization.

3. Under any liability coverage, to injury, sickness, disease, death or destruction resulting from the hazardous properties of nuclear material, if

(a) the nuclear material (1) is at any nuclear facility owned by, or operated by or on behalf of, an insured or (2) has been discharged or dispersed therefrom;

(b) the nuclear material is contained in spent fuel or waste at any time possessed, handled, used, processed, stored, transported or disposed of by or on behalf of an insured; or

(c) the injury, sickness, disease, death or destruction arises out of the furnishing by an insured of services, materials, parts or equipment in connection with the planning, construction, maintenance, operation or use of any nuclear facility, but if such facility is located within the United States of America, its territories or possessions or Canada, this exclusion (c) applies only to injury to or destruction of property at such nuclear facility.

4. As used in this exclusion:

"hazardous properties" include radioactive, toxic or explosive properties;

"nuclear material" means source material, special nuclear material or byproduct material;

"source material", "special nuclear material", and "byproduct material" have the meanings given them in the Atomic Energy Act of 1954 or in any law amendatory thereof;

"spent fuel" means any fuel element or fuel component, solid or liquid, which has been used or exposed to radiation in a nuclear reactor;

"waste" means any waste material (1) containing byproduct material and (2) resulting from the operation by any person or organization of any nuclear facility included within the definition of nuclear facility under paragraph (a) or (b) thereof;

"nuclear facility" means

(a) any nuclear reactor,

(b) any equipment or device designed or used for (1) separating the isotopes of uranium or plutonium, (2) processing or utilizing spent fuel, or (3) handling, processing or packaging waste,

(c) any equipment or device used for the processing, fabricating or alloying of special nuclear material if at any time the total amount of such material in the custody of the insured at the premises where such equipment or device is located consists of or contains more than 25 grams of plutonium or uranium 233 or any combination thereof, or more than 250 grams of uranium 235,

(d) any structure, basin, excavation, premises or place prepared or used for the storage or disposal of waste, and includes the site on which any of the foregoing is located, all operations conducted on such site and all premises used for such operations;

"nuclear reactor" means any apparatus designed or used to sustain nuclear fission in a self-supporting chain reaction or to contain a critical mass of fissionable material;

with respect to injury to or destruction of property, the word "in-jury" or "destruction" includes all forms of radioactive contamination of property.

(h) under Coverage C, to loss due to nuclear reaction, nuclear radiation or radioactive contamination, or to any act or condition incident to any of the foregoing.

### CONDITIONS

(The conditions, except conditions 3, 4, 5, 7, 8, 9, 10, 11 and 12, apply to all coverage's. Conditions 3, 4, 5, 7, 8, 9, 10, 11 and 12, apply only to the coverage noted thereunder.)

**1. Premium.--**The premium bases and rates for the hazards described in the declarations are stated therein. Premium bases and rates for hazards not so described are those applicable in accordance with the manuals in use by the company.

The term "contract cost" means the total cost of all work described in Item 6 of the declarations.

The term "rental cost" means the total cost to the Contractor for rental of work trains or other railroad equipment, including the remuneration of all employees of the insured while operating, attached to or engaged thereon. The advance premium stated in the declarations is an estimated premium only. Upon termination of this policy the earned premium shall be computed in accordance with the company's rules, rates, rating plans, premiums and minimum premiums applicable to this insurance. If the earned premium thus computed exceeds the estimated advance premium paid, the company shall look to the Contractor specified in the declarations for any such excess; if less, the company shall return to the said Contractor the unearned portion paid.

In no event shall payment of premium be an obligation of the named insured.

**2. Inspection.--**The named insured shall make available to the company records of information relating to the subject matter of this insurance.

The company shall be permitted to inspect all operations in connection with the work described in Item 6 of the declarations.

**3. Limits of Liability, Coverage A.--**The limit of bodily injury liability stated in the declarations as applicable to "each person" is the limit of the company's liability for all damages, including damages for care and loss of services, arising out of bodily injury sustained by one person as the result of any one occurrence; the limit of such liability stated in the declarations as applicable to "each occurrence" is, subject to the above provision respecting each person, the total limit of the company's liability for all such damage arising out of bodily injury sustained by two or more persons as the result of any one occurrence.

**4. Limits of Liability, Coverage's B and C.**--The limit of liability under Coverages B and C stated in the declarations as applicable to "each occurrence" is the total limit of the company's liability for all damages and all loss under Coverage B and C combined arising out of physical injury to, destruction or loss of all property of one or more persons or organizations, including the loss of use of any property due to such injury or destruction under Coverage B, as the result of any one occurrence.

Subject to the above provision respecting "each occurrence," the limit of liability under Coverage's B and C stated in the declarations as "aggregate" is the total limit of the company's liability for all damages and all loss under Coverage's B and C combined arising out of physical injury to, destruction or loss of property, including the loss of use of any property due to such injury or destruction under Coverage B.

Under Coverage C, the limit of the company's liability for loss shall not exceed the actual cash value of the property, or if the loss is of a part thereof the actual cash value of such part, at time of loss, nor what it would then cost to repair or replace the property or such part thereof with other of like kind and quality.

**5. Severalty of Interests, Coverage's A and B.**-- The term "the insured" is used severally and not collectively, but the inclusion herein of more than one insured shall not operate to increase the limits of the company's liability.

**6. Notice.**--In the event of an occurrence or loss, written notice containing particulars sufficient to identify the insured and also reasonably obtainable information with respect to the time, place and circumstances thereof, and the names and addresses of the injured and of available witnesses, shall be given by or for the insured to the company or any of its authorized agents as soon as practicable. If claim is made or suit is brought against the insured, he shall immediately forward to the company every demand, notice, summons or other process received by him or his representative.

**7. Assistance and Cooperation of the Insured, Coverage's A and B.**--The insured shall cooperate with the company and, upon the company's request, attend hearings and trials and assist in making settlements, securing and giving evidence, obtaining the attendance of witnesses and in the conduct of suits. The insured shall not, except at his own cost, voluntarily make any payment, assume any obligation or incur any expense other than for such immediate medical and surgical relief to others as shall be imperative at the time of accident.

**8. Action Against Company, Coverages A and B.**--No action shall lie against the company unless, as a condition precedent thereto, the insured shall have fully complied with all the terms of this policy, nor until the amount of the insured's obligation to pay shall have been finally determined either by judgment against the insured after actual trial or by written agreement of the insured, the claimant and the company.

Any person or organization or the legal representative thereof who has secured such judgment or written agreement shall thereafter be entitled to recover under this policy to the extent of the insurance afforded by this policy. No person or organization shall have any right under this policy to join the company as a party to any action against the insured to determine the insured's liability. Bankruptcy or insolvency of the insured or of the insured's estate shall not relieve the company of any of its obligations hereunder.

**Coverage C.**--No action shall lie against the company unless, as a condition precedent thereto, there shall have been full compliance with all the terms of this policy nor until 30 days after proof of loss is filed and the amount of loss is determined as provided in this policy.

**9. Insured's Duties in Event of Loss, Coverage C.--**In the event of loss the insured shall:

- (a) protect the property, whether or not the loss is covered by this policy, and any further loss due to the insured's failure to protect shall not be recoverable under this policy; reasonable expenses incurred in affording such protection shall be deemed incurred at the company's request;
- (b) file with the company, as soon as practicable after loss, his sworn proof of loss in such form and including such information as the company may reasonably require and shall, upon the company's re-request, exhibit the damaged property.

**10. Appraisal, Coverage C.--**If the insured and the company fail to agree as to the amount of loss, either may, within 60 days after the proof of loss is filed, demand an appraisal of the loss. In such event the insured and the company shall each select a competent appraiser, and the appraisers shall select a competent and disinterested umpire. The appraisers shall state separately the actual cash value and the amount of loss and failing to agree shall submit their differences to the umpire. An award in writing of any two shall determine the amount of loss. The insured and the company shall each pay his chosen appraiser and shall bear equally the other expenses of the appraisal and umpire.

The company shall not be held to have waived any of its rights by any act relating to appraisal.

**11. Payment of Loss, Coverage C.--**The company may pay for the loss in money but there shall be no abandonment of the damaged property to the company.

**12. No Benefit to Bailee, Coverage C.--**The insurance afforded by this policy shall not inure directly or indirectly to the benefit of any carrier or bailee, other than the named insured, liable for loss to the property.

**13. Subrogation.--**In the event of any payment under this policy, the company shall be subrogated to all the insured's rights of recovery therefor against any person or organization and the insured shall execute and deliver instruments and papers and do whatever else is necessary to secure such rights. The insured shall do nothing after loss to prejudice such rights.

**14. Application of Insurance.--**The insurance afforded by this policy is primary insurance.

**15. Three Year Policy.--**A policy period of three years is comprised of three consecutive annual periods. Computation and adjustment of earned premium shall be made at the end of each annual period. Aggregate limits of liability as stated in this policy shall apply separately to each annual period.

**16. Changes.--**Notice to any agent or knowledge possessed by any agent or by any other person shall not effect a waiver or a change in any part of this policy or stop the company from asserting any right under the terms of this policy; nor shall the terms of this policy be waived or changed, except by endorsement issued to form a part of this policy.

**17. Assignment.--**Assignment of interest under this policy shall not bind the company until its consent is endorsed hereon.

**18. Cancellation.--**This policy may be canceled by the named insured by mailing to the company written notice stating when thereafter the cancellation shall be effective. This policy may be canceled by the company by mailing to the named insured, Contractor and governmental authority at the respective addresses shown in this policy written notice stating when not less than 30 days thereafter such cancellation shall be effective. The mailing of notice as aforesaid shall be sufficient proof of notice. The effective date and hour of cancellation stated in the notice shall become the end of the policy period. Delivery of such written notice either by the named insured or by the company shall be equivalent to mailing.

If the named insured cancels, earned premium shall be computed in accordance with the customary short rate table and procedure. If the company cancels, earned premium shall be computed pro rata. Premium adjustment may be made either at the time cancellation is effected or as soon as practicable after cancellation becomes effective, but payment or tender of unearned premium is not a condition of cancellation.

**19. Declaration.--**By acceptance of this policy the named insured agrees that such statements in the declarations as are made by him are his agreements and representations, that this policy is issued in reliance upon the truth of such representations and that this policy embodies all agreements existing between himself and the company or any of its agents relating to this insurance.

In witness whereof, the \_\_\_\_\_ Insurance Company has caused this policy to be signed by its president and a secretary at \_\_\_\_\_, and counter-signed on the declaration page by a duly authorized agent of the company.

(Facsimile of Signature)

(Facsimile of Signature)

\_\_\_\_\_  
Secretary

\_\_\_\_\_  
President

CERTIFICATE OF INSURANCE

This is to certify to:

- (1) Division of Right of Way  
Railroad Agreements, MS-37  
California Department of Transportation  
1120 N Street, Sacramento, California 95814

RAILROAD FILE NO.  
M.P. 157.3  
PUC No.: A-157.3.-A  
Roseville Subdivision

- (2) and to the following Railroad Company: Union Pacific Railroad Company

That such insurance as is afforded by the policy or policies described below for bodily injury liability and property damage liability is in full force and effect as of the date of this certificate and covers the following contractor as a named insured with respect to liability for damages arising out of operations performed by or for the named insured in connection with the contract or work described below.

1. Named Insured and Address

This is to certify that policies of insurance listed below have been issued to the insured named above and are in force at this time. Notwithstanding any requirement, term or condition of any contract or other document with respect to which this certificate may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

2. Description of Work

Contract No. \_\_\_\_\_

<u>Coverage's</u>  Contractor's Bodily Injury Liability and Property Damage Liability	<u>Policy Expiration Date</u>	<u>Limits of Liability Each Occurrence</u>	<u>Aggregate</u>
Umbrella or Excess Liability			

All of the coverages include coverage for the completed operations hazard, and X, C and U exposures.

Name of Insurance Company by Coverage

<u>Coverage's</u>	<u>Company</u>	<u>Policy Number</u>
<u>Bodily Injury Liability</u>	_____	_____
<u>Property Damage Liability</u>	_____	_____
<u>Umbrella or Excess Liability</u>	_____	_____

4. The policy or policies described above will not be amended, altered, modified or cancelled until thirty (30) days after written notice thereof has been given by registered mail to the Railroad named as certificate holder in this certificate.

Certificate Date:

For \_\_\_\_\_  
(Insurance Company)

By \_\_\_\_\_  
(Authorized Agent or Representative)

State of California  
Department of Transportation  
DH-0S-A104(8-10-00)

**CONTRACTOR'S ENDORSEMENT**

A. As a condition to entering upon Railroad's right-of-way to perform work pursuant to this agreement, Licensee's contractor, \_\_\_\_\_, whose address is \_\_\_\_\_

(hereinafter "Contractor), agrees to comply with and be bound by all the terms and provisions of this agreement relating to the work to be performed and the insurance requirements set forth in Section 13 of the Contract Special Provisions.

B. Before the Contractor commences any work, the Contractor will provide the Railroad with (1) a binder of insurance for the Railroad Protective Liability Insurance described in Section 13.2 of the Contract Special Provisions, and the original policy (or a certified duplicate original policy), and (2) a certificate issued by its insurance carrier providing the other insurance coverage required pursuant to Section 13.2 of the Contract Special Provisions in a policy or policies which contain the following type endorsement:

Union Pacific Railroad Company is named as an additional insured with respect to all liabilities arising out of Insured's performance of work on behalf of the State.

C. This endorsement shall be completed and directed to:

Mr. Jim Smith  
Manager Industry & Public Projects  
Union Pacific Railroad Company  
10031 Foothills Boulevard  
Roseville, CA 95678  
(916) 789-6352

\_\_\_\_\_ CONTRACTOR (print name on above line)

By: \_\_\_\_\_

Title: \_\_\_\_\_

**ENGINEER'S ESTIMATE  
03-1A8014**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
61	160101	CLEARING AND GRUBBING	LS	LUMP SUM	LUMP SUM	
62	190101	ROADWAY EXCAVATION	M3	13 900		
63	192036	STRUCTURE EXCAVATION (CRIB WALL)	M3	210		
64	193012	STRUCTURE BACKFILL (CRIB WALL)	M3	270		
65	032316	ARRESTOR BED AGGREGATE	M3	580		
66	194001	DITCH EXCAVATION	M3	2450		
67	198001	IMPORTED BORROW	M3	10 800		
68	198007	IMPORTED MATERIAL (SHOULDER BACKING)	M3	460		
69 (S)	202007	DUFF	M2	20 000		
70 (S)	203003	STRAW (EROSION CONTROL)	TONN	20		
71 (S)	203014	FIBER (EROSION CONTROL)	KG	4000		
72 (S)	203024	COMPOST (EROSION CONTROL)	KG	10 000		
73 (S)	203026	MOVE-IN/MOVE-OUT (EROSION CONTROL)	EA	6		
74 (S)	203045	PURE LIVE SEED (EROSION CONTROL)	KG	225		
75 (S)	203056	COMMERCIAL FERTILIZER (EROSION CONTROL)	KG	6000		
76 (S)	203061	STABILIZING EMULSION (EROSION CONTROL)	KG	1000		
77 (S)	204017	PLANT (GROUP W)	EA	1000		
78	260201	CLASS 2 AGGREGATE BASE	M3	13 300		
79	260210	AGGREGATE BASE (APPROACH SLAB)	M3	85		
80	280000	LEAN CONCRETE BASE	M3	2430		

## ENGINEER'S ESTIMATE

03-1A8014

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
81	377501	SLURRY SEAL	TONN	320		
82	390095	REPLACE ASPHALT CONCRETE SURFACING	M3	850		
83	390155	ASPHALT CONCRETE (TYPE A)	TONN	15 600		
84	394002	PLACE ASPHALT CONCRETE (MISCELLANEOUS AREA)	M2	620		
85	394040	PLACE ASPHALT CONCRETE DIKE (TYPE A)	M	2650		
86	394044	PLACE ASPHALT CONCRETE DIKE (TYPE C)	M	1860		
87	394048	PLACE ASPHALT CONCRETE DIKE (TYPE E)	M	1750		
88	394049	PLACE ASPHALT CONCRETE DIKE (TYPE F)	M	1890		
89	397001	ASPHALTIC EMULSION (PAINT BINDER)	TONN	14		
90	401000	CONCRETE PAVEMENT	M3	74 800		
91	032317	INTERMEDIATE PAVEMENT ANCHOR	EA	12		
92	401082	SHOULDER RUMBLE STRIP (PCC, GROUND-IN INDENTATIONS)	STA	18		
93	404092	SEAL PAVEMENT JOINT	M	65 500		
94	BLANK					
95 (F)	510053	STRUCTURAL CONCRETE, BRIDGE	M3	3		
96	049597	STRUCTURE CONCRETE APPROACH SLAB (TYPE R(9D))	M3	217		
97	049598	STRUCTURE CONCRETE APPROACH SLAB (TYPE(9S))	M3	153		
98	032318	MINOR CONCRETE (SHOULDER BARRIER SLAB AND FOOTING)	M3	920		
99 (F)	510502	MINOR CONCRETE (MINOR STRUCTURE)	M3	304		
100	510800	PAVING NOTCH EXTENSION	M3	5.5		

## ENGINEER'S ESTIMATE

03-1A8014

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
101	511106	DRILL AND BOND DOWEL	M	48		
102	513601	REINFORCED CONCRETE CRIB WALL (TYPE A)	M2	90		
103	515041	FURNISH POLYESTER CONCRETE OVERLAY	M3	66		
104 (F)	515042	PLACE POLYESTER CONCRETE OVERLAY	M2	3260		
105	BLANK					
106 (S-F)	520106	BAR REINFORCING STEEL (EPOXY COATED)	KG	520		
107 (S-F)	560218	FURNISH SIGN STRUCTURE (TRUSS)	KG	19 600		
108 (S-F)	560219	INSTALL SIGN STRUCTURE (TRUSS)	KG	19 600		
109 (S)	561008	760 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	14		
110 (S)	561009	920 MM CAST-IN-DRILLED-HOLE CONCRETE PILE (SIGN FOUNDATION)	M	22		
111	566011	ROADSIDE SIGN - ONE POST	EA	29		
112	566012	ROADSIDE SIGN - TWO POST	EA	17		
113	568001	INSTALL SIGN (STRAP AND SADDLE BRACKET METHOD)	EA	80		
114	568016	INSTALL SIGN PANEL ON EXISTING FRAME	M2	61		
115	620909	450 MM ALTERNATIVE PIPE CULVERT	M	9		
116	620913	600 MM ALTERNATIVE PIPE CULVERT	M	220		
117	681990	FILTER FABRIC	M2	670		
118	682001	PERMEABLE MATERIAL	M3	90		
119	690160	300 MM CORRUGATED STEEL PIPE DOWNDRAIN (2.01 MM THICK)	M	280		
120	690166	450 MM CORRUGATED STEEL PIPE DOWNDRAIN (2.01 MM THICK)	M	71		

**ENGINEER'S ESTIMATE****03-1A8014**

Item	Item Code	Item	Unit of Measure	Estimated Quantity	Unit Price	Item Total
161	839720	CONCRETE BARRIER (TYPE 732)	M	400		
162 (S)	840572	100 MM THERMOPLASTIC TRAFFIC STRIPE (RECESSED)	M	7320		
163 (S)	032324	200 MM THERMOPLASTIC TRAFFIC STRIPE (RECESSED)	M	3720		
164 (S)	840564	200 MM THERMOPLASTIC TRAFFIC STRIPE (BROKEN 3.66 M - 0.92 M)	M	970		
165 (S)	032325	100 MM THERMOPLASTIC TRAFFIC STRIPE (RECESSED, BROKEN 5.18 M - 2.14 M)	M	440		
166 (S)	840573	100 MM THERMOPLASTIC TRAFFIC STRIPE (RECESSED, BROKEN 10.98 M - 3.66 M)	M	40 800		
167 (S)	840575	100 MM TWO-COMPONENT PAINT TRAFFIC STRIPE	M	68 700		
168 (S)	840661	TWO-COMPONENT PAINT PAVEMENT MARKING	M2	150		
169 (S)	860504	EXTINGUISHABLE MESSAGE SIGN SYSTEM	LS	LUMP SUM	LUMP SUM	
170 (S)	860520	HIGHWAY ADVISORY RADIO SYSTEM	LS	LUMP SUM	LUMP SUM	
171	BLANK					
172	BLANK					
173 (S)	860990	CLOSED CIRCUIT TELEVISION SYSTEM	LS	LUMP SUM	LUMP SUM	
174 (S)	861504	MODIFY LIGHTING AND SIGN ILLUMINATION	LS	LUMP SUM	LUMP SUM	
175 (S)	032327	FIBER OPTIC SYSTEM	LS	LUMP SUM	LUMP SUM	
176 (S)	519121	JOINT SEAL (TYPE B-MR30MM)	M	138		
177	999990	MOBILIZATION	LS	LUMP SUM	LUMP SUM	

**TOTAL BID: \_\_\_\_\_**