

SECTION E

SPECIAL PROVISIONS

The following Special Provisions supplement and amend the Standard Specifications for Public Works Construction (2012 edition) and the Standard Specifications of the State of California Department of Transportation (Caltrans), latest edition, as noted herein. These Special Provisions have been arranged into a format that parallels the Standard Specifications for Public Works Construction (SPPWC).

SECTION E - SPECIAL PROVISIONS

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PART 1 - GENERAL PROVISIONS

SECTION 1 - TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS

1-2 TERMS AND DEFINITIONS.

Add or redefine the following:

Agency – The City of Torrance, herein referred to as CITY.

Board – The City Council of the City of Torrance, herein referred to as City Council.

Engineer –The Public Works Director and/or City Engineer of the City of Torrance, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Claim - A separate demand by the Contractor for (A) a time extension, (B) payment of money or damages arising from work done by or on behalf of the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (C) an amount the payment of which is disputed by the Agency.

1-3 ABBREVIATIONS

1-3.2 Common Usage:

Add the following abbreviations:

Approx.	Approximate
CA	Consulting Arborist
C.F.	Cubic Feet
Exist.	Existing
L.A.C.D.P.W.	Los Angeles County Department of Public Works
L.F.	Linear Foot or Linear Feet
Med.	Median
M.L.	Main Line
OH	Overhead
Ped.	Pedestrian
Reconst.	Reconstruct
Temp.	Temporary
Theo.	Theoretical
WM	Wire mesh or water meter

SECTION 2 - SCOPE AND CONTROL OF THE WORK

2-1 AWARD AND EXECUTION OF CONTRACT.

Replace the entire subsection with the following:

Within ten (10) working days after the date of the CITY'S award of contract, the Contractor shall execute and return all Contract Documents required by the CITY. The CITY reserves the right to terminate the award if the above requirement is not met. Such termination will result in the forfeiture of the Proposal Guaranty.

The Contract shall not be considered binding upon the CITY until executed by the authorized CITY officials.

2-3 SUBCONTRACTS

2-3.2 SELF PERFORMANCE. Replace the second sentence with the following:

The following work will be considered as "Specialty Items":

Sewer: Clean and CCTV Inspection
Sewer Rehabilitation
Construct Manhole
Traffic Control for Sewer Rehabilitation.

2-4 CONTRACT BONDS.

Revise the second sentence of the fourth paragraph to read as follows:

The "Performance Bond" shall remain in effect for one year following the date specified in the Notice of Completion or, if no Notice of Completion is recorded, for one year following the date of final acceptance by the Engineer.

2-5 PLANS AND SPECIFICATIONS

2-5.1 General. Add the following sentence to the first paragraph to read as follows:

The Contractor shall maintain a control set of Plans and Specifications on the Work site at all times. All final locations determined in the field, and any deviations from the Plans and Specifications, shall be marked in red on this control set to show as-built conditions. Upon completion of the Work, the Contractor shall submit the control set to the Engineer for approval. Final payment will not be made until this requirement is met.

Add the following subsections:

2-5.1.1 Plans. Included as part of the Contract Documents are the following, which show the location, character, dimensions or details of the Work:

- 1) Project Plans

The existing utility information and data provided with the Contract Documents are based on existing plans and documents. The plans and data are provided for information only. The Owner does not guarantee their accuracy and correctness. If the

Bidder in preparing the Bid Proposal uses this information, the Bidder assumes all risks resulting from conditions differing from the information shown. The Bidder, in consideration for the information being provided, hereby releases the Owner and Consulting Engineer from any responsibility of obligation as to the accuracy of such information or for any additional compensation for work performed due to assumptions based on the use of such information.

2) Standard Plans

- a. City of Torrance Standard Plans, latest edition.
- b. City of Redondo Beach Standard Plans, latest edition.
- c. Standard Plans for Public Works Construction, latest edition, promulgated by Public Works Standards, Inc.
- d. Standard Plans of the State of California Department of Transportation (Caltrans), latest edition.
- e. Standard Plans of the Los Angeles County Department of Public Works, latest edition.
- f. American Water Works Association Standards, latest edition.

Applicable Standard Plans and information for this project are included in the Appendices of these Specifications.

2-5.1.2 Specifications. The Work shall be performed or executed in accordance with these Special Provisions and the following:

- 1) Standard Specifications for Public Works Construction, 2012 edition and supplements thereto, hereinafter referred to as the Standard Specifications, as written and promulgated by Public Works Standards, Inc. The Standard Specifications are published by BNi Building News, Inc., 1612 South Clementine Street, Anaheim, CA 92802, Phone: (800) 873-6397.
- 2) Sections 56-4, 84, 85, 86 of the State of California Department of Transportation (Caltrans) Standard Specifications, latest edition.
- 3) American Water Works Association Standards, latest edition.

2-5.2 Precedence of Contract Documents. Replace the entire subsection with the following:

If there is a conflict between any of the Contract Documents, the document highest in precedence shall control. The order of precedence shall be as follows:

- a) Permits issued by other agencies.
- b) Change Orders (including Plans and Specifications attached thereto).
- c) Public Works Agreement.
- d) Addenda.
- e) Bid/ Proposal.
- f) Special and General Provisions.
- g) Plans.

- h) City Standard Plans.
- i) Other Standard Plans.
- j) Standard Specifications for Public Works Construction.
- k) Reference Specifications.

With reference to the Plans/Drawings, the order of precedence is as follows:

- 1) Change Order plans govern over Addenda and Contract plans
- 2) Addenda plans govern over Contract plans
- 3) Contract plans govern over standard plans
- 4) Detail plans govern over general plans
- 5) Figures govern over scaled dimensions

Within the Specifications, the order of precedence is as follows:

- 1) Change Orders
- 2) Permits from other agencies/Supplemental Agreements
- 3) Special Provisions
- 4) Instruction to Bidders
- 5) Referenced Standard Plans
- 6) Referenced Standard Specifications

If the Contractor, in the course of the Work, becomes aware of any claimed errors or omissions in the Contract Documents or in the CITY's fieldwork, the Contractor shall immediately inform the Engineer. The Engineer shall promptly review the matter, and if the Engineer finds an error or omission has been made the Engineer shall determine the corrective actions and advise the Contractor accordingly. If the corrective work associated with an error or omission increases or decreases the amount of work called for in the Contract, the CITY shall issue an appropriate Change Order in accordance with 3-3. After discovery of an error or omission by the Contractor, any related work performed by the Contractor shall be done at the Contractor's risk unless authorized by the Engineer.

2-5.3 Submittals

2-5.3.2 Working Drawings. Add the following:

In addition to the working drawings required per Table 2-5.3.2 (A), the following working drawings are required:

Item	Subsection No.	Title	Subject
16	300-1	Recycling Summary	Recycling
17	307	Street Light Relocation	Street Light Relocation
18	306	Storm Drain Modifications	Storm Drain Modification
19	7-8.5.1, 7-8.5.2, 7-8.5.3, 306-9	Sanitary Sewers	Sewage Bypass and Pumping
20	7-10.2.2	Work Area Traffic Control Plan for Sewer Rehabilitation	Traffic Control Plan

For sewer repairs that cannot be accommodated by either the project traffic control plans or City Standard plans, the contractor shall submit traffic control plan(s) to be approved by the engineer. Working drawings listed above as item "20" shall be prepared by a Civil Engineer registered by the State of California.

2-5.3.4 Supporting Information. Replace the second paragraph with the following:

Submittals are required for the following:

- 1) Asphalt concrete mix designs per 203-6.2.
- 2) Asphalt rubber hot mix designs
- 3) Concrete mix designs per 201-1.1.
- 4) List of Materials per 4-1.4.
- 5) Confined Space Entry Program per 7-10.4.5.1.
- 6) Equipment and materials list per 307-1.
- 7) Certificates of Compliance per 4-1.5.
- 8) Crushed Miscellaneous Base mix designs/properties
- 9) Signs/Posts
- 10) Striping and Marking Materials
- 11) Irrigation Materials
- 12) Landscape Materials
- 13) Retaining walls
- 14) Detectable Warning Surfaces
- 15) Trees
- 16) Street Lights
- 17) Cobblestones
- 18) Boulders
- 19) Pavement Crack Sealer
- 20) Storm drain pipe, manholes
- 21) Pipe rehabilitation method
- 22) Manhole rehabilitation method
- 23) Sewer pipe, manhole and flow handling
- 24) Sewer Liner Materials
- 25) Traffic Signal materials
- 26) Loop detector wire and sealant
- 27) Structural Design for Temporary Steel Plate Bridging
- 28) Construction Schedule
- 29) Storm Water Pollution and Prevention Plan
- 30) Video Detection equipment for traffic signals

In addition to the above, submittals may be required for any product, manufactured item, or system not specifically listed above.

2-6 WORK TO BE DONE.

Add the following:

The Work generally consists of the construction of pavement improvements and rehabilitation as shown on City of Torrance **Plan No ST-1055 (sheets 1 to 37, C2013-003, LS-73, TL-160A, TL-161A, TL-162A)**, including survey; sawcut, removals, excavation, clearing and grubbing, grading; storm drain modifications, fire hydrant relocation; curb, gutter, sidewalk, curb ramps, cross gutters, driveways; retaining wall; cold milling, pavement reconstruction, asphalt overlay, crack seal and

pavement preparation; landscaping, irrigation; traffic signals, loop detectors; street lighting; tree removal; sewer manhole and all other incidental work in this specification document.

The Work also consists of the rehabilitation or replacement of existing sanitary sewers and sanitary sewer point repairs as shown in the Appendices of these Specifications.

2-9 SURVEYING

2-9.1 Permanent Survey Markers. Replace the entire subsection with the following:

The Contractor shall not disturb survey monuments, lot stakes (tagged), centerline ties, or benchmarks without notifying the Engineer. The Contractor shall be responsible to have a surveyor document all surveying monuments, lot stakes (tagged), centerline ties, and bench marks that may be disturbed during construction. In the event that identification numbers on survey monuments are illegible, it shall be the responsibility of the Contractor to obtain all information necessary to restore the monuments in their correct location. The Contractor or its Surveyor shall file a Corner Record Form at the Los Angeles County Surveyor referencing survey monuments subject to disturbance prior to the start of construction and also prior to the completion of construction, including a location for reestablishment of disturbed monuments. Copies of the records shall be provided to the City. **Final payment will not be made until the aforementioned documentation is provided to the CITY.** Existing monuments that have already been referenced, tied out, and submitted to the County are attached hereto.

All surveying shall be done by a Registered Licensed Land Surveyor or a Registered Civil Engineer authorized to practice land surveying within the state. All monuments and centerline ties shall be tied out and reset in accordance with Section 8771 (Land Surveyors Act) of the Business and Professions Code of the State of California.

The Contract Unit Price for "Construction Survey" shall include full compensation for furnishing all labor, materials, equipment, tools and incidentals for doing all the work involved in preserving and/or constructing of the survey monuments, complete in place, and no additional compensation shall be made.

2-9.2 Survey Service. Replace the first two paragraphs with the following:

All construction surveying necessary to complete the Work shown on the Plans and provided in these Contract Documents shall be accomplished by or under the direction of a Registered Land Surveyor or Registered Civil Engineer authorized to practice land surveying in the State of California, retained or provided by the Contractor. The CITY reserves the right to direct additional construction survey work be performed at no additional cost when the City determines it is required to adequately construct the Work.

The Contractor shall notify the Engineer in writing at least 2 working days prior to the actual survey. The Contractor shall provide any required traffic control necessary for construction surveying. Prior to disturbing survey monuments, the Contractor shall notify the Engineer in accordance with Section 2-9.1.

Stakes shall be set and stationed by the Contractor for curbs, curbs and gutters, sidewalks, access ramps, bus pads, driveways, headers, storm drains, sewers, cross gutters, spandrels, alley intersection, catch basin, rough grade, and other items as necessary. A corresponding cut or fill to finished grade (or flow line) shall be indicated on a grade sheet. A copy of each grade sheet shall be furnished to the Engineer. If any construction survey stakes are lost or disturbed and need to be replaced, such replacement shall be by the Contractor at its expense.

Construction stakes shall consist of the following:

- a. Offset line and grade stakes for gravity sewer at 50-foot intervals with grade sheets indicating cut to the pipe invert.
- b. One set of control stakes for manholes and jacking pits.
- c. One set of paving stakes.
- d. Pipe heading checks for line and grade at each manhole.
- e. Line and grade of new curb and gutter.
- f. Line and grade of existing features shown on the plan to be replaced in kind sufficient for their construction.

The Contractor shall submit to the City within 2 days after completion of each respective survey, setting of each stake and heading check a copy of the survey notes and calculations certified by the licensed Land Surveyor for the following:

- a. Level and horizontal control circuit for survey control.
- b. Grade sheets for pipeline stakes.
- c. Pipe heading checks.

Add the following:

The Contractor shall provide all labor, work and materials necessary to survey the work to conform to plan lines and limits, provide grades for drainage, establish pavement grades, match to existing conditions, and otherwise lay out the work as necessary for construction. The Contractor shall review and set all reference points, grades and elevations to the satisfaction of the Engineer prior to construction operations.

Various existing survey monuments have already been surveyed and records have been filed with the County. A copy of the records will be provided to the Contractor for his use in reestablishing the monuments after construction. Prior to the start of construction, the Contractor's licensed land surveyor or registered Civil Engineer licensed to practice land surveying in the State of California shall obtain and review the survey records as noted, and shall satisfy himself as to the completeness thereof.

After construction and prior to final acceptance by the City of the construction project, the Contractor's land surveyor or qualified Civil Engineer shall reestablish all survey monuments within the construction zone, prepare tie sheets and Corner Records as indicated above, and file them with the City Engineer for review. After review by the City Engineer the land surveyor shall file the Corner Records with the County Land Surveyors Office, and file certified copies of the Corner Records with the City Engineer.

All survey monuments removed or altered as a result of construction shall be reset, and Corner Records filed with the County of Los Angeles Land Surveyor's Office, and approved final Corner Records filed with the Engineer. Centerline ties removed as a result of construction shall be reset and tie sheets filed with the Engineer.

The land surveyor shall provide a letter of certification for all monuments having four or more existing ties which are within 0.02 ft plus or minus of the original City tie sheet records. When several monuments or ties appear on one tie sheet and one of the ties has changed, the land surveyor shall re-measure all of the ties and re-file a new tie sheet with the City as required herein.

County of Los Angeles permanent and temporary bench marks within the construction zone shall be located by survey, and the Contractor's Land Surveyor shall send a written notification of impending construction to the County of Los Angeles Land Surveyor's Office two weeks prior to construction.

Lines and grades for the construction shall be the responsibility of the Contractor, with the following provisions:

All work under this contract shall be built in accordance with the lines and grades shown on the plans. Field survey for establishing these, and for the control of construction, shall be the responsibility of the Contractor. All such survey work including construction staking shall be done under the supervision of a California Licensed Land Surveyor or authorized Civil Engineer. Staking shall be done on all items ordinarily requiring grade and alignment, at intervals normally accepted by the agencies and trade involved.

The Contractor shall provide a copy of the office calculations and grade sheets to the Engineer. The Contractor shall be responsible for any errors in the finished work, and shall notify the Engineer, in writing, within 24 hours, of any discrepancies, or design errors during the construction staking.

Contractor shall provide construction surveying for relocation of any conflicting utilities and provide a reasonable time window of opportunity to the utility owners to relocate their facilities after the survey is provided by the Contractor.

All costs for construction survey staking including construction staking, professional services, office calculations, furnishing all labor, materials, equipment, tools and incidentals, and for doing all work involved shall be considered as included in the price for which such work is appurtenant thereto, and no additional allowance will be made therefor.

Add the following subsection:

2-9.5 Payment. Payment for construction surveying shall be on a lump sum (LS) basis per the Contract Unit Price for "Construction Survey" and shall include, but not limited to, construction staking, location and/or relocation of conflicting utilities, locating survey monuments, setting of survey monuments and center line ties, preparing and filing centerline tie sheets and corner Records, locating Bench Marks and notifying the County Surveyor's Office of same, professional office services and field calculation, and furnishing all labor, materials, tools, equipment and incidentals for doing all work involved. No additional compensation shall be allowed therefore.

Payment for "Construction Survey" shall be prorated on a monthly basis, with final payment made upon receipt of final record drawings provided by the surveyor to the City.

2-10 AUTHORITY OF THE BOARD AND THE ENGINEER.

Add the following:

Failure of the Contractor to comply with the requirements of the Contract Documents, or to follow the directions of the Engineer, and/or to immediately remedy such noncompliance or to

follow directions, may, upon notice from the Engineer, result in the suspension of the Contract monthly progress payments. Any monthly progress payments so suspended may remain in suspension until the Contractor is in compliance with the Contract Documents and the directions of the Engineer, as determined by the Engineer.

2-11 INSPECTION.

Replace the entire subsection with the following:

The Work is subject to inspection and approval by the Engineer. The Contractor shall notify the Engineer a minimum of 48 hours in advance of the required inspection.

The Engineer will make, or have made, such inspections and tests as he deems necessary to see that the Work is in conformance with the Contract Documents. In the event such inspections or tests reveal noncompliance with the Contract Documents, the Contractor shall bear the cost of such corrective measures as deemed necessary by the Engineer, as well as the cost of subsequent re-inspection and re-testing.

Work done in the absence of inspection by the Engineer may be required to be removed and replaced under the inspection of the Engineer, and the entire cost of removal and replacement, including the cost of all materials which may be furnished by the CITY and used in the work thus removed, shall be borne by the Contractor, regardless of whether the work removed is found to be defective or not. Work covered without the approval of the Engineer shall, if so directed by the Engineer, be uncovered to the extent required by the Engineer, and the Contractor shall similarly bear the entire cost of performing all the work and furnishing all the materials necessary for the removal of the covering and its subsequent replacement, including all costs for additional inspection.

The Engineer and any authorized representatives shall at all times have access to the Work during its construction at shops and yards as well as the Work site. The Contractor shall provide every reasonable facility for ascertaining that the materials and workmanship are in accordance with the Contract Documents.

Inspection of the Work shall not relieve the Contractor of the obligation to fulfill all conditions of the Contract.

Add the following subsections:

2-11.1 Special Inspection Fees. If the Contractor elects to work under this Contract more than 8 hours/day or more than 40 hours/week, Saturday, Sunday, or CITY holidays, the Contractor shall arrange with the Engineer for the required inspection service and pay the Special Inspection Fees which will be charged at the following rates:

Mondays through Fridays	-	\$135.00 per hour
Saturdays, Sundays, Holidays	-	\$1,200.00 per day

Fees may be deducted from payments due to the Contractor at the discretion of the Engineer.

If the Contractor works under this contract at times other than within the allowed working hours without permission from or prior arrangement with the Engineer, the Contractor will be charged a lump sum amount of \$500.00 for each occurrence, in addition to the above fees. The amount will be deducted from a Progress Payment.

2-11.2 General Requirements. The Contractor shall comply with the following requirements:

- 1) No excavation or open trench may be backfilled without first securing Health Department approval. If any piping, reclaimed or potable, is installed prior to plan check approval and/or inspection, all or any portion of the system may be required to be exposed and corrected as necessary.
- 2) Unused or abandoned potable water lines are to be severed as close to water mains as practical, capped, and a 10-foot section of abandoned line removed and cemented under Health Department supervision.
- 3) A dye or pressure test must be utilized to confirm the physical separation of the reclaimed and potable water system. Said testing shall be performed in conjunction with the Water Department and the Health Department and conducted before the introduction of reclaimed water.

2-11.3 Inspections During Construction. During the construction, the Contractor shall make the Work site available for periodic inspections by the regulatory agencies. These agencies may include: Los Angeles County Department of Health Services, Los Angeles Regional Water Quality Control Board, the State of California Department of Health Services Drinking Water Field Operations Branch, and CITY Water Department.

2-11.4 Material Inspection/Testing and other City Expenses

- (a) If a City subcontractor hired to perform material inspection and/or testing is required to work additional time to perform inspection and testing as a result of an action or delay caused by the Contractor, except for specific work allowed by the Engineer, the City subcontractor may charge the City an additional fee. The Engineer may deduct the additional fee for said inspection and testing from a Progress Payment to the Contractor. The Engineer also may deduct the cost to perform additional testing when an initial test fails to meet the requirements of this Contract. The typical rates for material testing and inspection are available upon request from the Public Works Department.
- (b) If the Contractor does not comply with a requirement of these Special Provisions or if it does not immediately respond, after being informed, to a request by the Engineer to amend a site condition that jeopardizes the public health, safety or welfare, the Engineer may direct City staff to perform the work. For each occurrence, the City will charge the Contractor a base charge in the amount of \$750 in addition to all costs incurred by the City for administration, labor, equipment and materials. The standard rates for City staff are available upon request from the Public Works Department.
- (c) For each sign, drum, delineator, cone, barricade, warning device, or other type of required traffic control device that is not provided and/or replaced by the Contractor when required by the Traffic Control Plans and/or directed by the Engineer, the Engineer may deduct \$75 per day for each missing device from a Progress Payment.
- (d) Temporary lane closures maintained prior to 8:30 A.M. and/or after 3:30 P.M. may have a negative economic effect on the local residential, commercial or industrial community. Unless a temporary lane closure is otherwise authorized, the Engineer may deduct a fee from a Progress Payment for each temporary lane closure maintained prior to 8:30 A.M. or after 3:30 P.M. The fee will be assessed at a rate of \$700 per each travel lane per each thirty (30) minute interval, or fraction thereof.

Add a subsection as follows:

2-13 CCTV Videos.

In 2012 and 2013, CCTV inspections were performed by the City of Torrance for the sewer lines to be replaced or rehabilitated under this contract. The CCTV videos, together with logs of the results, are available at the Public Works Department of the City of Torrance, located at 20500 Madrona Avenue. Prospective Bidders may contact Joe Enzmann at (310) 618-3062 during normal business hours and schedule an appointment to view these videos during normal working business hours.

The videos and logs are solely for information. The CITY does not guarantee their accuracy and correctness, and in no event is such information to be considered to be a part of the Contract Documents. If the Bidder in preparing the Bid Proposal uses this information, the Bidder hereby assumes all risks resulting from conditions differing from the information shown. The Bidder, in consideration of the opportunity to review the information, hereby releases the CITY from any responsibility or obligation as to the accuracy or completeness of such information, or for any additional compensation for work performed due to assumptions based on the use of such information. The availability of said videos does not relieve the Contractor of its responsibility to perform a new video inspection.

Add a subsection as follows:

2-14 COORDINATION AND NOTIFICATIONS TO RESIDENTS AND BUSINESSES.

In order to provide for smooth coordination of the work and timely notifications to the businesses and residences affected by the construction, the City will hold weekly field meetings lasting approximately one hour in which the contractor foreman, project manager and/or superintendent shall be present. Prior to beginning work, contractor shall deliver written notices to each resident or business affected by the work which will be provided by the CITY. Any written communication to residents and/or businesses requires advance approval from the CITY. Contractor is to notify each resident or business of the proposed start of work date and estimated duration of work affecting said resident or business. In addition, Contractor shall be responsible to notify each resident or business of anticipated noise, odors and access restrictions and shall coordinate with each resident or business to maintain access and security of the work site. Initial contact with private property owners shall be with the presence of the Inspector or Engineer.

SECTION 3 – CHANGES IN WORK

3-2 CHANGES INITIATED BY THE AGENCY

Section 3-2.2.1 General. Delete this subsection in its entirety. Add the following:

The City reserves the right to increase or decrease any bid item quantity, as necessary, to meet the City's needs and/or the project and/or budget requirements. If the City increases or decreases any bid item quantity by more than 25% of the original contract quantity, either the City or the Contractor may initiate discussions and/or negotiations regarding a potential adjustment to the contract unit bid price.

Section 3-2.2.2. Increases of More Than 25%. Delete this subsection in its entirety.

Section 3-2.2.3. Decreases of More Than 25%. Delete this subsection in its entirety.

3-3 EXTRA WORK

3-3.1 General. Add the following:

Payment for additional work and all expenditures in excess of the Contract Price must be authorized in writing by the Engineer. Such authorization shall be obtained by the Contractor prior to engaging in additional work. It shall be the Contractor's sole responsibility to obtain written approval from the Engineer for any change(s) in material or in the work proposed by suppliers or subcontractors. No payment shall be made to the Contractor for additional work which has not been approved in writing, and the Contractor hereby agrees that it shall have no right to additional compensation for any work not so authorized.

The Contractor shall be responsible to provide all data and to obtain all approvals required by the Specifications, including submittal of Daily Extra Work Reports. No claims or extras shall be approved by the Engineer unless all work was done under the direction of and subject to the approval of the Engineer. Disputed work claims shall comply with 3-3 as modified herein.

3-3.2.2.3 Tools and Equipment Rental. Replace the second paragraph with the following:

The Contractor will be paid for the use of equipment at the lower of the actual rental rates paid by the Contractor or the rental rates listed for such equipment in either the "Rental Rate Blue Book" published by Dataquest, Inc., 1290 Ridder Park Drive, San Jose, California 95131; telephone (408) 971-9000 or the California Department of Transportation publication entitled "Labor Surcharge and Equipment Rates" available at the Caltrans web site, www.dot.ca.gov/hq/eqsc/inforesources.htm, which is in effect on the date upon which the work is accomplished, and that hereby is made a part of the Contract, regardless of ownership or any rental or other agreement, if such may exist, for the use of such equipment entered into by the Contractor. If it is deemed necessary by the Engineer to use equipment not listed in the said publication, a suitable rental rate will be established by the Engineer. The Contractor may furnish any cost data that might assist the Engineer in the establishment of such rental rate.

3-3.2.3 Markup. Add the following:

The markups mentioned hereinafter shall include, but are not limited to, all costs for the services of superintendents, project managers, timekeepers and other personnel not working directly on the change order, and pickup or yard trucks used by the above personnel. These costs shall not be reported as labor or equipment elsewhere except when actually performing work directly on the change order and then shall only be reported at the labor classification of the work performed.

3-3.2.3.1 Work by Contractor. Replace with the following:

The following percentages shall be added to the Contractor's costs and shall constitute the mark-up for all overhead and profit, which shall be deemed to include all items of expense not specifically designated as cost or equipment rental in Subsections 3-3.2.2(a), 3-3.2.2(b), and 3-3.2.2(c).

Labor	20
Materials	15

Equipment Rental	15
Other Expenditures	15

To the sum of the costs and markups provided for in this subsection, one (1) percent shall be added as compensation for bonding.

3-3.2.3.2 Work by Subcontractor. Replace with the following:

When any part of the extra work is performed by a subcontractor, the markup established in 3-3.2.3(a) shall be applied to the subcontractor's actual cost of such work. A markup of ten (10) percent on the first \$5,000 of the subcontracted portion of the extra work and a mark-up of 5 percent on work added in excess of \$5,000 of the subcontracted portion of the extra work may be added by the Contractor.

The markups specified in parts (a) and (b) above shall be considered as including, but not limited to, the Contractor's labor costs for personnel not working directly on the extra work, including the cost of any tools and equipment that they may use. Such costs shall not be reported as labor or equipment costs elsewhere except when they are actually used in the performance of the extra work. Labor costs shall in that case be reported for the labor classification corresponding to the type and nature of extra work performed.

3-4 CHANGED CONDITIONS

Add the following:

This subsection does not apply to utilities.

SECTION 4 – CONTROL OF MATERIALS

4-1 MATERIALS AND WORKMANSHIP

4-1.1 General

Add the following paragraph after the second paragraph:

If the work, or any portion thereof, shall be damaged in any way, or if any defective materials or faulty workmanship shall be discovered at any time prior to the final payment, the Contractor shall forthwith, at its own cost and expense, repair said damage, or replace such defective materials, or remedy such faulty workmanship in a manner satisfactory to the Engineer.

4-1.2 Protection of Work and Materials

Add the following:

The Contractor shall assume all risks and expense of interference and delay in his operations, and the protection from or the repair of damage to improvements being built under the contract, as may be caused by water of whatever quantity from floods, storms, industrial waste, irrigation, underground or other sources. However, the Contractor shall be entitled to an extension of time in accordance with the provisions of Subsection 6-6. The Contractor shall also assume full responsibility and expense of protecting, or removing and returning to the site of Work, all equipment or materials under his care endangered by any action of the elements.

Furthermore, the Contractor shall indemnify and hold the City harmless from all claims or suits for damages arising from his operations in dewatering the Work and control of water.

SECTION 5 – UTILITIES

5-1 LOCATION.

Add the following:

The Contractor shall provide coordination with all the utility companies involved and shall provide protection from damage to their facilities. The Contractor shall be responsible for repair or replacement to said facilities made necessary by its failure to provide required protection. The Contractor is required to include utility requirements in the Construction Schedule per Section 6-1.

The Contractor shall utilize the services of "Underground Service Alert-Southern California" for utility locating in all public right-of-ways by calling 1-800-227-2600 at least 48 hours prior to any excavation.

New piping shall go over or under the existing utilities as indicated on the plans. Where not indicated, the Contractor shall assume that the new piping will cross under the existing utility. The Contractor shall pothole existing utilities as shown on the plans, as directed by the Engineer or as deemed necessary by the Contractor. The cost of potholing herein specified shall be included in the prices paid for other items of work and no additional compensation will be allowed.

Where water lines exist, at each angle point, cross connection and "T" connection, the Contractor, for bidding purposes, shall assume the existence of a concrete thrust block located such as to resolve thrust loads. Any and all costs resulting from the existence of a thrust block, including costs for its removal and restoration if required, shall be deemed as being included in the prices bid for the various items of work.

Underground lines that are potentially hazardous such as oil company lines, natural gas mains, and electrical conduits will be carefully located by the owner as provided in the Standard Specifications. The Contractor shall take special precautions in determining the precise location and depth of these structures to insure that they will not be damaged by its operations.

Substitute the following for the last paragraph:

Prior to starting construction, the Contractor shall be responsible to determine the location and depth of all utilities which have been marked by the respective owners and which may affect or be affected by its operations. The Contractor also shall determine the location and depth of each service connection, whether or not marked. Full compensation for such work shall be considered as included in the prices bid for other items or work. If a utility which was marked or a service connection is found to interfere with the work after construction has commenced, the Contractor shall be solely responsible for all costs of any delay and for any costs which could have been avoided if the Contractor had located the utility prior to start of construction.

5-2 PROTECTION.

Add the following:

If, in the course of construction, the Contractor damages a sewer lateral or water lateral, the Contractor shall be responsible to completely expose said lateral from the main line to the point of connection at private property to verify integrity of all joints to the satisfaction of the Engineer. This

shall not be considered to be extra work and no extra costs shall be allowed therefor.

Sewers, including lateral repairs, shall be constructed of Vitrified Clay Pipe, unless otherwise approved in writing by the Engineer.

Add the following after the final paragraph:

As noted in subsections 5-2.1, 5-2.2 and 5-2.3 utilities are classified and are to be handled in one of three ways by the Contractor in the course of performing the contract.

Add the following subsections:

5-2.1 Noninterfering Utilities

Utilities that are not abandoned by the owner and do not physically interfere with the permanent work in its final location shall be supported, protected and maintained in place by the Contractor, and the Contractor shall be solely responsible for any damage, loss or injury, or death resulting from his/her failure to do so and the Contractor shall indemnify and hold harmless the City from any and all such consequences. Noninterfering utilities may, with the permission of the owner and the Public Works Director, be relocated still farther from the permanent work in its final locations, but the Contractor shall not so consider, in submitting his bid, unless the relocation is shown on the plans.

5-2.2 Abandoned Utilities

Abandoned utilities are those portions of any utility which are no longer needed or desired by the owner and whose destruction is consented to by the owner and/or is permitted by notation on the plans. Abandoned utilities which physically interfere with the permanent work or with the construction thereof shall be removed by the Contractor and the Contractor shall be solely responsible for any damage, loss or injury, or death resulting from the removal and the Contractor shall indemnify and hold harmless the City from any and all such consequences.

5-2.3 Interfering Utilities

Any utility shall be deemed an interfering utility (1) which physically occupies any part of the space to be occupied by the permanent work in its final locations, or (2) whose length within the theoretical width of excavation for the permanent work exceeds five times the width of said theoretical excavation whether or not the utility physically interferes with the permanent work. Interfering utilities that are not abandoned by the owner shall be relocated so as not to interfere with the permanent work in its final location. Such relocation will be performed by the owner or the City unless otherwise shown on the plans.

The Contractor shall exercise caution to prevent damage to or movement of the utilities while constructing the permanent work along and adjacent to the utilities.

Should any manhole extend within a trench excavation, the Contractor shall choose one of the following methods of construction and shall assume all responsibilities thereof:

- (1) Support and maintain the manholes in place during the construction of the permanent work in open cut.
- (2) Remove the shaft and maintain the base of the manhole in place until the backfill is placed and compacted; then reconstruct the manhole shaft.

- (3) Use another method of construction which has been submitted to and approved by the Engineer. All costs for the work pertaining to the manholes that might be found to extend partially within the excavation limits or any protective measures required due to the proximity of the manholes and the permanent work at these locations shall be absorbed in the prices bid for the various items of work.

5-2.4 Protection of Underground Hazardous Utilities. This Subsection shall apply to projects where there are underground utilities within the Work area which may be potentially hazardous if damaged. A hazardous substance shall be defined as one having the potential for an immediate disaster such as, but not limited to, gasoline, electricity, fuel oil, butane, propane, natural gas, chlorine or other chemicals.

Abandoned or inoperative utilities designed to carry hazardous substances and unidentified or unknown utilities shall be considered hazardous until determined otherwise. Whenever the Contractor is directed by the Engineer to tap these lines, the Contractor shall provide personnel specialized in this work and payment therefore will be considered as extra work per 3-3 of these Special Provisions.

The Contractor shall comply with the following requirements when working around underground hazardous utilities:

- 1) The Contractor shall not trench or excavate within the area where a utility known to carry a hazardous substance exists until its location has been determined by excavation or other proven methods acceptable to the Engineer. The intervals between exploratory excavations or location points shall be sufficient to determine the exact location of the line. Unless otherwise directed by the Engineer, excavation for underground hazardous utilities shall be performed by the Contractor and paid for as specified per 5-1 of these Special Provisions.
- 2) If it is determined that the horizontal or vertical clearance between the utility known to carry hazardous substances and the construction limit is less than 300 mm (12 inches) (450mm (18 inches) if scarifying), the Contractor shall confer with its owner. Unless the owner elects to relocate the line or take it out of service, the Contractor shall not excavate until the line has been completely exposed within the limits of construction.
- 3) Once the physical location of the utility known to carry hazardous substances has been determined, the Contractor, in cooperation with and with the concurrence of the utility owner, shall determine how to protect and/or support the utility from damage before proceeding with the Work.
- 4) During all excavation and trenching operations, the Contractor shall exercise extreme caution and protect the utilities from damage.
- 5) The Contractor shall notify the Engineer, the public agency maintaining records for the jurisdiction in which the Project is located and the owner, if known, whenever previously unidentified or unknown underground utilities are encountered so that the location can be accurately established and made a part of permanent substructure records.

Full compensation for protecting underground hazardous utilities as specified or noted on the Plans shall be considered as included in the prices bid for the various items of work.

5-3 REMOVAL

Add the following:

It shall be the Contractor's responsibility irrespective of the notations on the plans to confirm or determine that a utility is to be abandoned before treating the same as an abandoned utility and shall assume all risks in so determining.

5-4 RELOCATION

Add the following:

City of Torrance fire hydrants shall be relocated by Contractor per City of Torrance Standard Plan T705 or T706 as directed by the Engineer.

City of Torrance water meters shall be relocated by Contractor per City of Torrance Standard Plan T703 or T704 as directed by the Engineer.

City of Torrance water valves shall be relocated by the Contractor per City of Torrance Standard Plan T712.

Substitute the following for the last paragraph:

For the purpose of these specifications, service connections shall be construed to mean all, or any portion of, the pipe, conduit, cable, or duct which connects a utility main distribution line to the meter of an individual user, and further, shall include the meter and such portions of said pipe, conduit, cable or duct on the user's side of the meter which affect the contract work or its prosecution.

The City will arrange for the alteration or permanent relocation of only such service connections, except sewer house connections and water laterals, that interfere with the permanent work in its final location and such alteration or permanent relocation will be performed by others at no expense to the Contractor. The Contractor shall be responsible for the alteration or permanent relocation of sewer connections and water laterals, unless otherwise approved by the Engineer.

In instances where the alteration or permanent relocation of interfering service connections can be avoided by encasing same in the slabs or walls of poured-in place concrete structures the Contractor shall, when directed by the Engineer, so encase such service connections, and any costs for such work shall be absorbed in the unit prices or included in the lump sum amounts bid for the various items of work.

Service connections which do not interfere with the project structures shall be maintained in place by the Contractor. The cost of such work shall be absorbed in the unit prices or included in the price bid for the various items of work.

Add the following subsection:

5-4.1 Relocation of Fire Hydrant

The Contractor shall coordinate with California Water Company for relocation of existing fire hydrant as shown per Plans. Hydrant shall be installed so that all parts are 2' clear from face of curb, with bolts 2" clear of finished sidewalk surface. Ports shall be oriented as directed by the Engineer.

The Contractor shall coordinate relocation of Fire Hydrant with the City of Redondo Beach and Cal Water. Contact John Mate at 310.318.0661 ext. 1-2277 or john.mate@redondo.org

Payment for complying with the work contained in this section shall be included as incidental.

5-5 DELAYS

Substitute the entire subsection with the following:

If the contractor discovers utility facilities not identified by the public agency in the contract plans or specifications, he shall immediately notify the City and utility in writing. The Contractor shall not be entitled to damage or additional payment, nor shall it be entitled to standby time for labor if a delay does occur. The Contractor also shall not be entitled to damage or additional payment for equipment not on the project during the occurrence of the event that caused the related delay. The Engineer will determine the extent of the delay attributable to such interferences, the affect of the delay on the project as a whole, and any commensurate extension of time.

Any failure of the City and/or utility company to accomplish relocations in a reasonable manner in light of the Contractor's operations (to the extent such operations would otherwise be feasible and in accordance with the contract and as disclosed to the City prior to the Contractor encountering any such utility) shall entitle the Contractor to an extension of contract time to the extent that, in the judgment of the Engineer, the Contractor's completion of the overall contract work has been delayed; however, the Contractor shall be entitled to no other remedy and, in submitting its bid, thereby waives such other remedies, if any, unless the relocation delay is the result of arbitrary, capricious or malicious conduct by the City.

SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF THE WORK

6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK.

Replace the entire subsection with the following:

6-1.1 Construction Schedule. Within ten (10) working days after the date of the CITY's execution of the Contract, the Contractor shall submit a proposed construction schedule to the Engineer for approval. The schedule shall be in accordance with 6-1.2 and 6-1.3 and shall be in sufficient detail to show chronological relationship of all activities of the Work. These include, but are not limited to: estimated starting and completion dates of various activities, submittal of shop drawings to the Engineer for approval, procurement of materials and scheduling of equipment.

Prior to issuing the Notice to Proceed, the Engineer will schedule a Pre-Construction Meeting with the Contractor to review the proposed construction schedule and delivery dates, arrange utility coordination and clarify inspection procedures.

Prior to starting any Work, the Contractor shall attend a Community Meeting to be scheduled by the Engineer. The meeting, to be held in the evening, will address the residents' questions and concerns regarding the Work, what can be expected during construction and vehicular and pedestrian access that may be temporarily restricted during construction.

Notwithstanding any other provisions of the Contract, the Contractor shall not be obligated to perform any work and the CITY shall not be obligated to accept or pay for any work performed by the Contractor prior to delivery of a Notice to Proceed. The CITY's knowledge of work being performed prior to delivery of the Notice to Proceed shall not obligate the CITY to accept or pay for

such work. The Contractor shall provide all required Contract bonds and evidences of insurance prior to commencing work at the site.

6-1.2 Commencement of the Work. Delete the subsection in its entirety. Add the following subsections:

6-1.3 Criteria. The construction schedule shall conform to the following criteria:

- 1) The schedule shall be prepared using the latest version of Primavera, Microsoft Project or approved equal.
- 2) Work activities shall be based on the items of work per 2-6, and the following:
 - a) Contract Unit Price items shall be subdivided into those portions to be constructed during each stage or phase of construction.
 - b) Lump sum items shall be subdivided into those portions to be constructed during each stage or phase of construction.
- 3) Utility relocations in coordination with the Contractor per 5-4 of these Special Provisions shall be considered as activities.
- 4) Required submittals, working and shop drawings shall be included as activities.
- 5) The procurement of construction materials and equipment with long lead times for deliveries shall be included as activities.
- 6) Work to be performed by subcontractors shall be identified and shown as work activities.
- 7) Start and completion dates of each activity shall be illustrated.
- 8) Completion of all Work under the Contract shall be within the time specified in 6-7 of these Special Provisions and in accordance with the Plans and Specifications.

6-1.4 Requirements. In preparing the construction schedule, the following items shall be considered:

Sequence of Construction - The Contractor shall sequence the Work in a manner to expeditiously complete the project with a minimum of inconvenience to the adjacent owners and to conform to the following:

1. **The Contractor may not begin any pavement reconstruction activities until it has completed the installation of all sewer repairs, storm drain improvements, traffic signals and new PCC improvements (i.e. curb/gutter, cross gutters, sidewalk, driveways, curb ramps, etc.) for the entire project.**
2. Sewer Repairs – All sewer repairs, and its related activities shall be completed in its entirety as the first order of the work. PCC improvements may occur during the same time as the sewer repairs as long as there is no conflict between the two operations, nor a conflict in regard to traffic control which shall be determined by the Engineer.

3. Storm Drain Improvements – Shall be performed in conjunction with the adjacent PCC improvements.
4. Concrete removal - All concrete removed shall be hauled off the Work site (including the Contractor's storage yard) no later than the calendar day following the day that the removal is performed. If the calendar day following the removal is a non-working day (Saturday, etc.) the concrete shall be hauled off the Work site on the same day it was removed. Unless otherwise authorized by the Engineer, failure by the Contractor to haul concrete from the Work site and/or Contractor's storage yard(s) in a timely manner may result in a liquidated damage assessed upon the Contractor. Such liquidated damage shall be determined by the Engineer and will be deducted, accordingly, from a Progress Payment due to the Contractor.
5. PCC construction - Construction of PCC sidewalks, driveways, access ramps, curbs, gutters and cross gutters shall be formed and poured within 5 working days following removal of the existing material at any location. Any adjacent trench (i.e. 1-foot wide slot trench), required to remove and construct said PCC construction shall be restored per these Specifications and no later than 2 calendar days following the PCC construction. Failure by the Contractor to comply with these requirements in a timely manner may result in a liquidated damage assessed upon the Contractor. Such liquidated damage shall be determined by the Engineer and will be deducted, accordingly, from a Progress Payment due to the Contractor.
6. The Contractor is required to work on tree and stump removals per 300-1.3.2(d), sidewalk, access ramps, curb, gutter, cross gutters and driveway replacements in a continuous operation and simultaneously with the work in item 1 above.
7. Traffic Signal Improvements – Potholing for the foundations shall occur prior to ordering the poles. Removal of old equipment and installation of new equipment shall be coordinated with the new PCC curb and gutter alignment.
8. The contractor is required to construct the new pavement in separate phases. **Refer to the Traffic Control Plans for additional requirements and sequencing of construction.** All pavement milling/reconstruction/overlay/paving shall be complete in one phase prior to the start of work in any subsequent phase. However, when approved by the Engineer, the Contractor may begin pavement reconstruction in a subsequent phase, prior to the application of permanent thermoplastic striping in the completed phase. Accordingly, the Contractor is required to provide and maintain temporary striping and/or reflectorized yellow and white tabbing in the completed phase until such permanent thermoplastic paint is applied.
9. Pavement removal - All pavement removed as a result of trenching shall be hauled off the Work site no later than the same day that the removal is performed.
10. Within 4 working days following the installation of the final AC or ARHM surface course in any Phase, the Contractor shall complete the adjustment of all manholes, valves and any other required surface facilities.
11. Within 5 working days following the installation of the final AC or ARHM surface course in any Phase, the Contractor shall complete the "cat-tracking" of all proposed pavement markings shown on the Plans. The City will inspect all "cat-tracking" within 2 working days and notify the Contractor of any needed corrections or adjustments. Upon approval of the "cat-tracking" by the Engineer, the Contractor shall then complete the

installation of all thermoplastic pavement markings no earlier than 7 calendar days following the installation of the final AC or ARHM surface course in any Phase, but under no circumstances later than 10 calendar days following the installation of the final AC or ARHM surface course in any Phase.

12. All new traffic detector loops shall be installed PRIOR to the installation of permanent thermoplastic pavement markings.
13. Tree and Stump removals per 300-1.3.2(d) are to be performed before concrete removals.
14. Irrigation systems - Irrigation systems disrupted by the Contractor shall not be left inoperable for more than three working days.
15. The proposed sequence of pavement construction. The Contractor may proceed with the pavement construction work after the completion of the sewer repairs and concrete work as listed above.
16. Upon completion of curb, gutter and sidewalk construction the Contractor shall complete all landscaping, irrigation and hardscape within 20 working days.
17. All Work shall only be performed between the hours of 7:00 a.m. and 3:30 p.m. unless otherwise approved by the Engineer.
18. A move-in period of 10 calendar days will be allowed starting on the date in the Notice to Proceed.
19. Holiday Moratorium per 7-10.1.6. of these Special Provisions.
20. Refuse collection. Refuse collection days are established and will not be changed. If a street or streets are scheduled for rehabilitation, cape or slurry sealing on a pick-up day, the Contractor shall wait until the refuse and recycling vehicles have completed their runs on that street. Further, the City requires a 24-hour cure period prior to a trash pick-up day. (For example, if Tuesday is the collection day for the streets in this contract, paving in this area is allowed on Mondays until 10:00 a.m. It is also allowed on Tuesday after the refuse and recycling trucks have passed.)

The City utilizes automated refuse and recycling vehicles. After trash collection, the City will attempt to place the trash containers on parkways and driveways and off of the roadway areas. In some cases, however, this may not be possible, and the contractor will be responsible for moving the receptacles out of the way.

For streets that are to be cold milled and overlay OR reconstructed, the Contractor must provide a stable driving surface on refuse collection day that can accommodate the weight of the City's refuse collection vehicle AND the refuse collection activity. It should be noted that refuse containers are placed along the curb/gutter so they can be "grabbed" by an automated collection arm.

21. Stockpile area. Schedule shall indicate date for cleanup of stockpile area.

Should the Contractor fail to meet these Requirements, the Engineer reserves the right to prohibit the Contractor from making further removals until the clean up, construction, or rehabilitation of sprinklers is in conformance with the aforementioned requirements. Furthermore, if after notice is given to the Contractor to perform work to meet these requirements, and the

Contractor refuses or for any reason fails to perform sufficiently to meet these schedules, CITY may perform said work and charge the Contractor for all costs incurred.

6-1.5 Updates. The Contractor shall submit 2 paper copies of the updated construction schedule to the Engineer on the first working day of each month.

If the Contractor decides to make a major change in the method of operations after commencing construction, or if the schedule fails to reflect the actual progress, the Contractor shall submit to the Engineer a revised construction schedule in advance of beginning revised operations.

Full compensation for complying with all requirements of Section 6-1.5 Updates shall be per the Contract Unit Price for "Mobilization". If the Contractor fails to submit an updated Construction Schedule to the Engineer on the first working day of each month, the CITY will deduct one-fifth the amount of the Contract Unit Price for each work day after the due date, up to maximum of \$300, that each monthly schedule update is not submitted.

6-1.6 Order of Work. The Contractor shall pothole mast arm pole foundations for conflicting utilities prior to ordering poles. The Contractor shall order traffic signal poles and equipment and/or other materials requiring a delivery delay within 5 working days subsequent to pothole activities. The Contractor shall provide written proof(s) of timely material order(s) and shall include any delivery delays in the Construction Schedule.

6-2 PROSECUTION OF THE WORK

Add the following subsection:

6-2.1 Order of Work. Prior to ordering any proposed traffic signal pole or equipment, the Contractor shall pothole at, and in the vicinity of, all proposed traffic signal pole foundations to determine the existence of any conflicting underground utilities. Contractor shall immediately, in writing, notify the Engineer of any conflict. The Contractor shall order traffic signal poles and equipment and/or other related materials with a delivery delay either no later than 5 working days subsequent to pothole activities (if no conflict) OR no later than 5 working days subsequent to resolution of utility conflicts. Contractor shall provide written proof(s) of timely material order(s) and shall include any delivery delays in the Construction Schedule.

6-7 TIME OF COMPLETION

6-7.1 General. Replace the first sentence with the following:

Time shall be of the essence in the Contract. The Contractor shall begin Work after the mailing by the Engineer to the Contractor, first class mail, postage prepaid, a Notice to Proceed and shall diligently prosecute the same to completion within **90 working days** from the start date specified in the Notice to Proceed.

6-8 COMPLETION, ACCEPTANCE AND WARRANTY

6-8.2 Acceptance. Replace with the following:

If, in the Engineer's judgment, the Work has been completed and is ready for acceptance, the Engineer will so certify and will determine the date when the Work was completed. This will be the date when the Contractor is relieved from responsibility to protect the Work. The Engineer may cause a Notice of Completion to be filed and recorded with the Los Angeles County Recorder's Office. At the Engineer's option, the Engineer may certify acceptance to the City Council who may then cause a Notice of Completion to be filed and recorded with the Los Angeles County Recorder's Office.

6-8.3 Warranty. Add the following subsection:

6-8.3.1 Manufacturer's Warranties. Manufacturer's warranties shall not relieve the Contractor of liability under these Specifications. Such warranties only shall supplement the Contractor's responsibility. The Engineer may, at his option, require a manufacturer's warranty on any product offered for use.

6-9 LIQUIDATED DAMAGES.

In each of the two paragraphs, substitute "\$1,500" in place of "\$250" as the amount of the liquidated damages per each consecutive calendar day.

Add the following Section 6-11:

6-11 SEQUENCE OF CONSTRUCTION.

6-11.1 Multiple Headings. In order to meet the contract schedule, the Contractor will be allowed to initiate and maintain two or more construction headings. However, the Contractor will not be allowed to have multiple phases of work occurring that have the corresponding traffic control devices in conflict with each other.

6-11.2 Sequencing Fire Hydrant Construction to Maintain Water Service. Fire hydrant and large meter replacements will need to be sequenced in order to maintain water service to the project area. The sequencing will need to be coordinated with the Water Division a minimum of two weeks prior to beginning any connections and/or shut downs of the existing water mains. Due to the availability of City personnel, no more than one set of valves may be shut off at any one time under this contract.

SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

7.2 LABOR.

7-2.3 Payroll Records. Add the following:

Payrolls and payroll records: any payrolls and payroll records required for this project shall be submitted, for each week in which any contract work is performed, to the Engineer. A retention of \$5,000 per report per pay period will be withheld from a progress payment for a late or missing report. A report shall be deemed as late or missing when not submitted to the Engineer within 10 calendar days from the close of the pay period for which the report applies. In addition, a non-refundable deduction of \$100 per report per day will be deducted from payments due the

Contractor for each late or missing report. The \$100 non-refundable deduction per day will be incurred beginning on the first day the report is late or missing.

Add the following subsection:

7-2.5 Subcontractor and DBE Records:

Subcontractor and DBE records: at the completion of the contract if the Contractor does not submit its Subcontractor and DBE Records to the Engineer a retention in the amount of \$10,000 per record will be withheld from a progress payment for a late or missing record. A record shall be deemed as late or missing when not submitted to the Engineer within 15 calendar days from the completion of the contract. In addition, a non-refundable deduction of \$300 per record per day will be deducted from payments due the Contractor for each late or missing record. The \$300 non-refundable deduction per day will be incurred beginning on the first day the record is late or missing.

7-2.6 Department of Industrial Relations' monitoring and enforcement of prevailing wage laws

SB 854 amended the Labor Code to require all contractors bidding on public works projects to register with the Department of Industrial Relations (DIR) and to pay an annual fee. The registration requires contractors to provide the State with evidence of the contractors' compliance with a number of statutory requirements. The registration requirement took effect on July 1, 2014 to fund the Department of Industrial Relations' monitoring and enforcement of prevailing wage laws. The registration period is open now, and contractors and subcontractors wishing to work on a public works project must be registered by March 1, 2015. For public agencies/awarding bodies, the new law requires that all public works projects with bids due after March 1, 2015, or awarded on or after April 1, 2015, use only registered contractors and subcontractors. The bill also requires awarding bodies to include notice of the registration requirement in their bid invitations and bid documents. In addition, public agencies must also file notice of their public works projects using DIR approved forms.

Registration is completed through an online application and requires a non-refundable \$300 fee to be paid by the contractors and subcontractors. The registration process requires contractors to:

- provide workers' compensation coverage to its employees
- hold a valid Contractors State License Board license
- have no delinquent unpaid wage or penalty assessments
- not be subject to federal or state debarment

Contractors must pay an annual renewal fee by July 1 of each year. The registration form is located on the DIR's website at <http://www.dir.ca.gov/DLSE/dlsepublicworks.html>.

To help awarding bodies and contractors comply with the new requirements, the DIR will post a database of registered contractors and subcontractors on its website. While non-registered contractors may not be awarded public works contracts after the effective date, inadvertently listing an unregistered subcontractor on a bid will not necessarily invalidate that bid. In addition, the registration requirement does not apply to private jobs that are determined to be public works after the contract has been awarded.

7-3 LIABILITY INSURANCE.

Replace the second sentence of the second paragraph with the following:

The Contractor must maintain at its sole expense the following insurance, which will be full coverage not subject to self-insurance provisions:

- 1) Automobile Liability, including owned, non-owned and hired vehicles, with at least the following limits of liability:
 - a) Combined single limits of \$2,000,000 per occurrence.
- 2) General Liability including coverage for premises, products and completed operations, independent contractors, personal injury and contractual obligations with combined single limits of coverage of at least \$3,000,000 per occurrence, with an annual aggregate of no less than \$5,000,000.

Add the following:

The Contractor must include all subcontractors as insureds under its policies or must furnish separate certificates and endorsements for each subcontractor.

7-4 WORKER'S COMPENSATION INSURANCE.

Add the following after the first sentence of the second paragraph:

Worker's Compensation Insurance shall be with limits as required by the State of California and Employer's Liability with limits of \$3,000,000 per accident.

7-5 PERMITS.

Replace the entire section with the following:

The Contractor shall obtain all necessary permits, including but not limited to, Encroachment Permits from the cities of Torrance, Redondo Beach, and Palos Verdes Estates.

The Contractor shall obtain a City of Torrance Business License and a no-fee Construction Excavation Permit before commencing construction. The Contractor shall obtain no-fee Electrical and Plumbing permits from the Building and Safety Department before commencing installation of new electrical services or on-site irrigation systems, as applicable.

Full compensation for complying with the above requirements shall be considered as included in the prices bid for the appropriate items of work.

Add the following subsections:

7-5.2 City of Redondo Beach Business License and Engineering Permit. The Contractor shall obtain a Business License and no-fee Engineering Permit from the City of Redondo Beach in order to establish and maintain traffic control devices in said City. See sample application in Appendix II. The Contractor shall pay a fee of \$192.00 for the Business License. The applications for Business License and Engineering Permit may be obtained and filed at the City of Redondo Beach, 415 Diamond St., Redondo Beach, CA 90277.

Unless otherwise authorized by the Engineering Permit, all traffic control within the City of Redondo Beach shall conform to these Contract Specifications.

Full compensation for complying with the above requirements shall be considered as included in the Contract Unit Price for "Mobilization."

7-5.3 City of Palos Verdes Estates Business License and Engineering Permit. The Contractor shall obtain a Business License and no-fee Engineering Permit from the City of Palos Verdes Estates as needed to establish and maintain traffic control devices in said City.

Full compensation for complying with the above requirements shall be considered as included in the Contract Unit Price for "Mobilization."

7-5.4 Los Angeles County Department of Public Works Permit. A permit may be required from the Los Angeles County Department of Public Works ("LACDPW") and must be obtained by the contractor, instead of the City. The Contractor shall pay all charges, fees and bonds for this permit.

Full compensation for complying with the above requirements shall be considered as included in the Contract Unit Price for "Mobilization".

Unless otherwise authorized by the LACDPW Permit and approved plan, all storm drain work shall be performed in accordance with these Specifications and Special Provisions.

7-6 THE CONTRACTOR'S REPRESENTATIVE

Add a third paragraph to the section stating the following:

The Contractor's Representative shall be approved by the CITY prior to the start of the Work. If the designated representative is rejected, the Contractor shall immediately designate another representative in writing and submit to the City for consideration. The CITY shall have the authority to require the Contractor to remove its representative and/or alternate representative at any time and at no cost to the CITY.

7-8 WORK SITE MAINTENANCE

7-8.1 General. The second paragraph is amended to read:

Unless directed otherwise by the Engineer, the Contractor shall furnish and operate a self-loading motor sweeper with spray nozzles at least once each working day to keep paved areas acceptably clean to the City whenever construction, including restoration, is incomplete.

7-8.6 Water Pollution Control.

7-8.6.1 General.

Add the following:

The size and nature of this Contract place it under the regulations of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharge Associated with Construction Activity. Construction activities including clearing, grading and excavating that result in land disturbances of equal to or greater than one acre shall be covered by the National Pollutant Discharge Elimination System General Construction Permit, State Water Board Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ. A copy can be downloaded at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2009/wqo/wqo2009_0009_dwq.pdf

Dischargers obtaining coverage will file electronically for coverage under Order No. 2009-0009-DWQ. Order No. 2009-0009-DWQ is a Risk Based permitting approach. The Contractor is required to review the State Water Resources Control Board website and determine this project's risk level.

Order No. 2009-0009-DWQ includes, in Attachment A, requirements for all Linear Underground/Overhead Projects (LUPs) that are covered under the Small LUP General Permit 2003-007-DWQ. LUPs will be broken into project segments designated as LUP Type 1, Type 2, and Type 3. These LUP Types are analogous to the risks levels for traditional construction projects.

This General Construction Permit regulates pollutants in discharges of storm water associated with construction activity. To obtain authorization for proposed storm water discharges, pursuant to this General Construction Permit, the CITY must submit to the Storm Water Multiple Application and Reporting Tracking System (SMARTS) a Notice of Intent (NOI), compliance and monitoring data and Annual Reports, when required, and a Notice of Termination (NOT). The Contractor shall provide to the CITY, at the required time, all required information necessary for the CITY to comply with these requirements.

The Contractor shall provide to the CITY its Storm Water Pollution Prevention Plan (SWPPP) both in hardcopy and pdf format, so the City may submit the SWPPP to the SMARTS online.

Following Construction and the Contractor's installation of any post-construction storm water Best Management Practices BMPs (for CITY approval), the Contractor shall notify the CITY in writing to request for consideration to terminate coverage under the General Construction Permit for a complete project and to submit a NOT via the SMARTS.

Full compensation for preparation, administration and all other work related of the NOI, NOT, required fees, construction, and post construction BMPs, sampling, analysis and reporting as required by Order No. 2009-0009-DWQ and all other related costs shall be considered as included in the bid for SWPPP and NPDES COMPLIANCE.

7-8.6.2 Best Management Practices (BMPs).

Add the following:

Best Management Practices shall be defined as any program, technology, process, siting criteria, operating method, measure, or device which controls, prevents, removes, or reduces pollution. The Contractor shall obtain and refer to the California Storm Water Best Management Practice Handbooks, Volume 3 Construction BMP Handbook and the Los Angeles County Department of Public Works Best Management Practices Handbook for Construction Activities. These publications are available from:

Los Angeles County
Department of Public Works
Cashier's Office
900 S. Fremont Avenue
Alhambra, CA 91803
Telephone (626) 458-6959

The Contractor shall have a minimum of two (2) readily accessible copies of each publication on the Work site at all times.

The Contractor shall implement BMPs in conjunction with the following construction operation and activities:

CONSTRUCTION PRACTICES	Clearing, Grading and Excavating
	Water Conservation Practices
	Dewatering
	Paving Operations
	Structure Construction and Painting
MATERIAL MANAGEMENT	Material Delivery and Storage
	Material Use
	Spill Prevention and Control
WASTE MANAGEMENT	Solid Waste Management
	Hazardous Waste Management
	Contaminated Soil Management
	Concrete Waste Management
	Sanitary/Septic Waste Management
VEHICLE AND EQUIPMENT MANAGEMENT	Vehicle and Equipment Cleaning
	Vehicle and Equipment Fueling
	Vehicle and Equipment Maintenance

The Contractor shall implement the following BMPs in conjunction with the previously listed construction operation activities:

VEGETATIVE STABILIZATION	Scheduling of Planting
	Preservation of Existing Vegetation
	Temporary Seeding and Planting
	Mulching
PHYSICAL STABILIZATION	Geotextiles and Mats
	Soil Stabilizer/Dust Control
	Temporary Stream Crossing
	Stabilized Construction Roadway
	Stabilized Construction Entrance
RUNOFF DIVERSION	Sodding, Grass Plugging, and Vegetative Buffer strips
	Earth Dikes, Drainage Swales, and Lined Ditches
	Top and Toe of Slope Diversion Ditches/Berms
	Slope Drains and Subsurface Drains
VELOCITY REDUCTION	Flared Culvert End Sections
	Outlet Protection/Velocity Dissipation Devices
	Check Dams
	Slope Roughening/Terracing/Rounding
SEDIMENT TRAPPING	Slit Fences
	Straw Bale Barrier

	Sand Bag Barrier
	Brush or Rock Filter
	Storm Drain Inlet Protection
	Sediment Traps
	Sediment Basin

Additional BMPs may be required as a result of a change in actual field conditions, contractor activities, or construction operations. When more than one BMP is listed under each specific BMP category, the Contractor shall select the appropriate and necessary number of BMPs within each category in order to achieve the BMP objective.

BMPs for contractor activities shall be continuously implemented throughout the year. BMPs for erosion control and sedimentation shall be implemented during the period from October 15 to April 15, and whenever the National Weather Service predicts rain within 24 hours. BMPs for erosion control and sedimentation shall also be implemented prior to the commencement of any contractor activity or construction operation that may produce run-off, and whenever run-off from other sources may occur.

The CITY, as a permittee, is subject to enforcement actions by the State Water Resources Control Board, the Environmental Protection Agency and private citizens. The CITY may assess the Contractor a penalty of \$1,000 for each calendar day that the Contractor has not fully implemented the appropriate BMPs and/or is otherwise in noncompliance with these provisions. In addition, the CITY will deduct, from the final payment due the Contractor, the total amount of any fines levied on the CITY, plus legal and staff costs, as a result of the Contractor's lack of compliance with these provisions and/or less than complete implementation of the appropriate BMPs.

Full compensation for the implementation of BMPs, including the construction, removal, and the furnishing of all necessary labor, equipment, and materials, shall be considered as included in the price bid for "SWPPP AND NPDES COMPLIANCE".

7-8.6.3 Storm Water Pollution Prevention Plan (SWPPP). Add the following:

Construction activities covered by the General Permit require submittal by the Contractor of a Storm Water Pollution Prevention Plan (SWPPP) prior to the start of any clearing, demolition, grading or excavation. A Storm Water Pollution Prevention Plan (SWPPP) shall be and defined as a report that includes site map(s), identification of construction and contractor activities that could pollute storm water, and a description of measures and practices to control the potential pollutants that is prepared by a certified Qualified SWPPP Developer (QSD). The preparation and implementation of the SWPPP is intended to ensure that the Contractor will make every reasonable effort to prevent the pollution of water resources during the period of construction. The Contractor shall prepare, submit to the CITY for review and approval, and implement a SWPPP for this Contract in compliance with these regulations.

The SWPPP shall be prepared, certified and amended by a QSD who meets the requirements of State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ. Additional information about these requirements and documents may be obtained at http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

The Contractor must submit the initial SWPPP document (2 hard copies and one pdf copy) to the CITY no later than fifteen (15) working days following the approval by the City Council of the Contract. The City will review the SWPPP within seven (7) calendar days. Should revisions be required, the Contractor shall again submit 2 hard copies and one pdf copy of the revised SWPPP. The City may take up to three (3) working days to re-review each revision. After the City

determines the SWPPP is acceptable and has no exceptions, the City will submit (upload) the SWPPP document to the online SMARTS system. The Contractor must allow for up to 7 calendar days for issuance of the WDID number, following upload of the document. No work may commence and no Notice to Proceed will be issued prior to the issuance of the WDID number. The Contractor shall consider this in its schedule in accordance with Section 6-1 of these Special Provisions. The SWPPP shall remain on the construction site while site is under construction, during working hours, commencing with the initial construction activity and ending with Notice of Termination.

Once certified by the City, the printed paper SWPPP certification will be returned to the Contractor. The Contractor shall submit the City-certified SWPPP to the Office Engineer specified in 2-5.3. In addition, the Contractor shall submit one electronic copy of the City-certified SWPPP in portable document format (pdf) on a read/write (R/W) capable compact disk (CD). The pdf-format SWPPP shall not exceed a file size of 70MB.

Review and certification by the City and acceptance by the SWRCB will not relieve the Contractor of the responsibility for the adequacy of the SWPPP nor for full compliance with all applicable Federal, State, and local laws and regulations governing water quality.

The Contractor shall keep (1) one printed paper copy of the City-certified SWPPP with the WDID and City-certified SWPPP amendments at the Project site. The SWPPP shall be made available to a representative of the RWQCB, SWRCB, United States Environmental Protection Agency or the City upon request. Any requests by the public shall be directed to the Engineer.

7-8.6.3.1 SWPPP Amendments. If, during construction operations, field conditions change in a manner which, in the opinion of the Engineer, significantly deviates from how the SWPPP, as approved by the CITY, addressed the current construction operation, the Engineer may direct the Contractor to revise the current construction operation and/or the SWPPP. Such directions will be made in writing and will specify the items of work for which the SWPPP is inadequate. No further work on these items will be permitted until the Contractor revises the construction operations to the satisfaction of the Engineer and/or until the Contractor submits a revised SWPPP and receives CITY approval. The Engineer will notify the Contractor of the acceptance or rejection of the revised SWPPP within seven (7) working days from the date of submittal.

The Contractor's QSD shall prepare and certify an amendment to the SWPPP when there is a change in construction activities or operations which may affect the discharge of pollutants to surface waters, ground waters, municipal storm drain systems, or when the Contractor's activities or operations violate any condition of the Permits or when so directed by the Engineer. Amendments shall describe additional water pollution control practices or revised operations, including those areas or operations not shown in the City-certified SWPPP. Amendments to the SWPPP shall be prepared and submitted for review and certification within 14 days of direction by the Engineer. The QSD and QSP, once identified in the City-certified SWPPP, shall not change without prior written approval by the Engineer. Such a change shall be considered as a SWPPP amendment and shall conform to the aforementioned provisions.

7-8.6.3.2 Implementation.

a) General. The Contractor shall be responsible year-round throughout the duration of the Project for implementation of the City-certified SWPPP and all certified SWPPP amendments. Unless otherwise notified by the Engineer, the Contractor's responsibility for implementation of the SWPPP shall continue throughout any temporary suspension of the Work or designated construction moratorium.

b) Qualified SWPPP Practitioner (QSP). The Contactor shall designate a QSP who meets the requirements of State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ.

The QSP shall have the authority and responsibility to fully implement the City certified SWPPP in accordance with the Contract Documents and shall be present full-time on the Project site at all times.

d) Rain Event Action Plan (REAP). The Contractor shall monitor the National Weather Service Forecast Office (www.noaa.gov) on a daily basis. The Contractor shall ensure that the QSP prepares a REAP 48 hours prior to any likely precipitation event. A likely precipitation event is any weather pattern that is forecast to have a 50 percent or greater probability of producing precipitation in the Project area. Each REAP shall be prepared using the REAP template in the SWPPP Preparation Manual. The Contractor shall assume there will be 20 likely rain events throughout the duration of the Contract.

The actions required by the REAP for each phase of construction shall be implemented 24 hours prior to the forecasted start of the likely precipitation event.

The Contractor's QSP shall submit a copy of the REAP to the Engineer 24 hours prior to each likely rain event. The Contractor's QSP shall maintain documentation of the actions implemented as part of the REAP. Completed REAPs shall be filed with the City-certified SWPPP.

e) Accumulated Precipitation Procedure (APP). The Contractor shall implement the APP in the City-certified SWPPP whenever a discharge of accumulated precipitation is necessary. No discharge of accumulated precipitation shall take place without an APP. The Contractor shall notify the Engineer 24 hours prior to the discharge of accumulated precipitation water in accordance with the APP.

f) Construction Site Monitoring Program (CSMP). The Contractor's QSP shall implement the CSMP included in the City-certified SWPPP for visual monitoring (inspections) and sampling and analysis. A daily printed paper copy of the National Weather Forecast Office forecast chance of rain and forecast precipitation amount shall be submitted by the Contractor's QSP to the Engineer within 24-hours of the forecast. The Contractor's QSP shall monitor the Project site for full compliance with the SWPPP. The Contractor's QSP shall conduct inspections and collect water quality samples in accordance with these Special Provisions. The Contractor shall plan for 10 qualifying rain events (producing precipitation of 1/2 inch or more at the time of discharge) and 3 samples per rain event (total 30 samples). CSMP implementation shall include the following:

i) Visual Monitoring. The Contractor's QSP shall inspect (visually monitor) the Project site and record the findings on the BMP Checklist in the SWPPP Preparation Manual during working hours. Visual monitoring inspections shall be performed only by the QSP as follows:

- A. Routinely, a minimum of once every week.
- B. Within 48 hours prior to a qualifying rain event.
- C. Within 48 hours after a qualifying rain event.
- D. At least every 24 hours during extended storm events (any measurable amount of precipitation (0.01 inch or more)).

The Contractor's QSP shall:

- ✓ Observe all BMPs to identify whether they have been properly implemented in accordance with the SWPPP/REAP. If needed, corrective actions shall be implemented by the Contractor.
- ✓ Inspect each drainage area for the presence of (or indications of prior) unauthorized and authorized non-storm water discharges and their sources.
- ✓ Monitor and report run-on from surrounding areas if there is reason to believe run-on to the Project site may contribute to the numeric action levels (NALs) being exceeded.
- ✓ Observe the discharge or likely discharge after working hours of stored, contained, trapped or otherwise accumulated storm water. Inspect for compliance with the APP.
- ✓ Complete the BMP Checklist provided in the SWPPP Preparation Manual to document inspection observations.
- ✓ Record the time, date, and rain gauge reading of all rain events. The rain gauge reading shall be either from a rain gauge on the job-site provided by the contractor with the location approved by the Engineer or from the Los Angeles County Department of Public Works' real-time rainfall data precipitation map, http://ladpw.org/wrd/precip/alert_rain/, unless otherwise approved by the Engineer.
- ✓ Print a daily paper copy of the rain gauge data for the previous 24 hours for the Project site and submit to the Engineer on the same day.
- ✓ Sign and submit one copy of the completed BMP Checklist to the Engineer within 24 hours of completing the inspection. One completed and signed copy of each BMP Checklist shall be kept with the on-site SWPPP.
- ✓ Identify and record BMPs that require maintenance to operate effectively, that have failed, or that could fail to operate as intended.
- ✓ Upon identifying BMP failures or other shortcomings, the Contractor's QSP shall implement repairs or design changes to BMPs within 24 hours. Correct unauthorized discharges immediately. This may require temporarily suspending certain work activities until work can continue, as approved by the Engineer, without an unauthorized discharge.

ii) Sampling and Analysis Plan (SAP). The Contractor's QSP shall implement the SAP included in the City-certified SWPPP for storm water sampling, non-storm water sampling and non-visible pollutant storm water sampling.

The Contractor's QSP shall submit rain event field water sampling and analytical data within 24 hours of the conclusion of the rain event. The Contractor's QSP shall submit non-storm water and non-visible pollutant water sampling laboratory results within 20 working days after sample collection. The Contractor's QSP shall submit the data in accordance with the SWPPP Preparation Manual.

A) Storm Water Sampling. The Contractor shall collect storm water samples for each qualifying event that produces 1/2 inch or more of precipitation. The Contractor shall:

- Collect and analyze effluent samples from each discharge location per day per qualifying rain event. A minimum of 3 samples shall be collected each day per qualifying rain event.
- Collect samples during working hours only.
- Ensure effluent samples are representative of the effluent in each drainage area.
- Collect a minimum of one (1) run-on sample from each area that may contribute to exceedance of NALs (See Table 7-8.6.3.2 (A)).
- Collect storm water grab samples of accumulated storm water that will be discharged in accordance with the APP.

Turbidity and pH meters shall be provided by the Contractor and retained on the Project site at all times and conform to Table 7-8.6.3.2 (A).

Table 7-8.6.3.2 (A)

Parameter	Test method	Min. Detection Limit	Units	Numeric Action Level (NAL)
pH	Calibrated portable pH meter	0.2	pH units	lower NAL 6.5 upper NAL 8.5
Turbidity	Calibrated portable turbidity meter	1	NTU	250

Turbidity and pH meters must be calibrated in accordance with the manufacturer’s specifications prior to use for field analysis. Calibration data shall be filed with the analytical results in the City-certified SWPPP at the Project site in accordance with the SWPPP Preparation Manual.

Field analytical results shall be submitted in writing to the Engineer using the Sampling Activity Log in the SWPPP Preparation Manual within 24 hours of analysis.

If any result exceeds NALs (Table 7-8.6.3.2 (A)), the Contractor’s QSP shall:

- Implement immediate corrective actions to address the cause of the exceedance and to prevent further exceedance of the NALs.
- Submit a Numeric Action Level Exceedance Report to the Engineer within 5 calendar days of the date of sampling. The report shall conform to the SWPPP Preparation Manual.
- The Contractor’s QSP shall sign and certify the Numeric Action Level Exceedance report.

B) Non-Storm Water Sampling. If the visual monitoring inspections of the Project site indicate any authorized or unauthorized non-storm water discharges, the Contractor’s QSP shall record the findings on the BMP Checklist and immediately implement the SAP for non-storm water sampling.

The Contractor shall collect samples of non-storm water discharge effluent at all discharge points. Each non-storm water sample shall be sent only to a lab certified by the California State Department of Health Services for the selected analysis. The current and valid laboratory certification shall be included in the SWPPP.

C) Non-Visible Pollutant Monitoring. The Contractor shall collect one (1) or more samples during any breach, malfunction, leakage, or spill observed during a visual inspection which could result in the discharge of pollutants to surface waters that would not be visually detectable in storm water. Samples shall be analyzed in the field or by a laboratory following the SWPPP Preparation Manual. Analytical results shall be submitted in accordance with 7-8.6.3.2 f) ii) and shall be accompanied by an evaluation from the Contractor’s QSP to determine if down gradient samples show elevated levels of the tested parameter relative to levels in the uncontaminated control sample. If down gradient samples show increased levels, the Contractor shall assess the BMPs, Project site conditions, and surrounding influences to determine the probable cause of the increase. As determined by the Contractor’s assessment, the Contractor shall repair or modify BMPs to address the increased levels of pollutants in down gradient samples.

Where appropriate BMPs are not implemented prior to a rain event, any failure of a BMP occurs, or spilled materials or wastes are not completely removed (including contaminated soils) which could result in the discharge of non-visible pollutants to surface waters, the requirements to conduct sampling and analysis shall apply. If the Engineer determines that the Contractor has not properly deployed or maintained the appropriate BMPs necessary to significantly reduce and minimize the discharge of pollutants, the Engineer will direct the Contractor to collect and analyze water quality samples as specified in these Special Provisions at no additional cost to the City.

g) Annual Report. The Contractor shall prepare, certify and submit to the Engineer an annual report for the reporting period of July 1 to June 30 of each year. If construction occurs through June 30, the report shall be submitted no later than July 15 for the prior reporting period. If construction ends before June 30, the report shall be submitted within 15 calendar days after the date of acceptance of the Work by the Engineer.

h) Enforcement and Penalties. The Contractor will be determined Non-Compliant with these Special Provisions for the following:

- 1) Noncompliance with the certified SWPPP or certified amendments.
- 2) Failure to provide full-time QSP on project site.
- 3) Failure to amend SWPPP or submit SWPPP amendments.
- 4) Failure to take immediate corrective action when so directed by the Engineer or when required by these Special Provisions.
- 5) Failure to make necessary corrections after a numeric action level exceedance.
- 6) Noncompliance with the immediate corrective action specified on the City-issued "Notice of BMP Noncompliance" form.
- 7) Noncompliance with applicable local permits.
- 8) Noncompliance with Federal, State and local water pollution control regulations.
- 9) Unauthorized or noncompliant discharge.

The Contractor will be assessed \$1,000 per violation per calendar day that the Contractor does not fully implement or comply with the provisions set forth in these Special Provisions. The penalty will be assessed from Contract progress payments due to the Contractor.

The Contractor shall be responsible for the costs and for the liabilities imposed by law as a result of the Contractor's failure to comply with these Special Provisions. Costs and liabilities include, but are not limited to, fines, penalties and damages whether assessed against the City or the Contractor, including those levied under the Federal Clean Water Act and the State Porter Cologne Water Quality Act. In addition the City will deduct, from any monies due the Contractor, the total amount of any legal fees, staff costs, and consultant fees incurred as a result of the Contractors non-compliance with these Special Provisions.

The Contractor shall notify the Engineer immediately following receipt of a request from any jurisdictional regulatory City, to enter, inspect, sample, monitor or otherwise access the Project site or the Contractor's records pertaining to water pollution control.

7-8.6.5 Payment.

Payment for preparation of the SWPPP, application fee, administrative costs, revisions amendments, and all other related costs shall be considered as included in the Contract Unit Price for "SWPPP AND NPDES COMPLIANCE."

Payment for implementation of the Agency-certified SWPPP, including SWPPP amendments, QSD/QSP training and certifications, QSP present full-time on the Project site, inspections, BMP inspection and maintenance, corrective actions, daily forecast and rain gauge data printing, implementation of the CSMP, APP implementation, implementation and removal of BMPs, 20 Rain Event Action Plans, sampling and analysis for 30 water quality samples, NAL reports, Annual Reports and all other SWPPP requirements and related costs, shall be considered as included in the lump sum Bid price for "SWPPP AND NPDES COMPLIANCE."

If the BMPs selected in the certified SWPPP do not meet the performance standards of subsection **7-8.6.3.2**, the Contractor shall implement additional BMPs and amend the SWPPP at no additional cost to the Agency.

If the Engineer determines that the Contractor has not properly deployed or maintained the BMPs necessary to significantly reduce and minimize the discharge of pollutants, the Engineer will direct the Contractor to collect and analyze water quality samples as specified in **7-8.6.3.2 f) ii)** at no additional cost to the Agency.

Payment will be prorated on a monthly basis over the duration of the Contract. The final payment will not be made until the final Annual Report is reviewed and accepted in writing by the Agency.

Add the following subsections:

7-8.7 Temporary Light, Power, and Water.

The contractor shall furnish, install, maintain and remove all temporary light, power and water at its own expense. These include piping, wiring, lamps, and other equipment necessary for the Work. The Contractor shall not draw water from any fire hydrant (except to extinguish a fire), without obtaining permission from the water agency concerned.

The Contractor shall obtain a construction water meter from the CITY by calling Global Water at (855) 354-5623. A \$1,000 deposit is required and refundable upon return of the meter in good working condition. The Contractor shall pay for the water used, at the CITY's current water rates.

Some water mains in Torrance are owned/operated by California Water Service. For rental of a hydrant meter the contractor shall call California Water Service at (310) 257-1400.

7-8.8 Contractor's Storage Yard. The Contractor shall be responsible for obtaining a storage yard for the duration of the Work. If the proposed location of the yard is located within the boundaries of the CITY, the Contractor shall obtain prior approval from the Engineer.

7-8.9 Graffiti Removal. The Contractor shall maintain the Work, all of its equipment, and all traffic control devices, including signage, free of graffiti throughout the duration of the Contract. The Contractor shall respond to any request from the Engineer to remove graffiti within 4 hours of notification. Should the Contractor fail to respond to such request, the CITY reserves the right to make other arrangements for the requested graffiti removal and deduct the cost from any monies due the Contractor.

7-9 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS

Add the following paragraph:

The Contractor shall be responsible to protect all new concrete work from being etched, scratched or otherwise marked or having wet slough material deposited thereon. If new concrete work is marked, the Contractor shall replace it at its expense in accordance with 303-5.7 of these special provisions.

The Contractor shall perform all private lawn, hardscape, and parkway restorations, (not included in the project plans) including restoration of irrigation systems and existing curb drains within five (5) days after the adjacent improvements have been constructed at his own expense. The Contractor shall not delay restorations for tree plantings.

Add the following subsections:

7-9.1 Replacement of Lawns. When the Contract requires the removal and replacement of lawns or sod, including parkways, the Contractor shall comply with the following minimum requirements: the area to be replanted shall be regraded and covered with two inches of an approved topsoil; the grass seed or sod shall be for grass or sod of the same type as was removed, or an approved equal, and grass shall be sown at the rate recommended by the seed distributing company; Bandini steer manure or approved equal shall be applied to the planted area at the rate recommended by the vendor. The Contractor shall water and care for replaced lawns until the grass has attained a complete cover and has been given its first cutting, unless other arrangements are made with the property owners. The lawn restoration, as above described, shall be completed prior to the final payment.

Topsoil shall be in accordance with 212-1.1.

7-9.2 Replacement of Sprinkler Systems. Damaged sprinklers shall be replaced so that the area watered by the original system will be adequately watered by the reconstructed system without undue waste of water. Overspray on any area no longer planted should be avoided, and any revised shape or layout of the remaining planted area will be adequately watered. Any additional material or work required to obtain said adequate coverage shall be furnished by the Contractor, at its expense. The Contractor shall be responsible to replace any lawn or plant damaged from lack of irrigation resulting from the Contractor's operations, at its expense, to the satisfaction of the Engineer.

7-9.3 Parkway Trees. The Contractor shall exercise all necessary precautions so as not to damage or destroy any trees or shrubs and shall not trim or remove any trees unless such trees have been approved for trimming or removal by the Engineer. All existing trees and shrubs that are damaged during construction shall be trimmed or replaced by the Contractor or a certified tree company to the satisfaction of the Engineer. Tree trimming and replacement shall be accomplished in accordance with the following requirements:

- (a) Trimming. Symmetry of the tree shall be preserved; no stubs, splits torn branches or torn roots left; clean cuts to be made close to trunk or large branch. Spikes shall not be used for climbing live trees. All cuts over one and one-half inches in diameter shall be coated with a suitable tree wound paint as approved by the Engineer.
- (b) Replacement. The Contractor shall immediately notify the Engineer if any tree is damaged by its operations. If, in the opinion of the Engineer, the damage is such that replacement is necessary, the Contractor shall replace the tree at its own expense. The tree shall be of a like variety as the tree damaged, subject to the approval of the Engineer. The size of the tree shall be the size of the tree replaced or 3" in diameter, whichever is smaller.

7-9.4 Street Furniture. The Contractor shall be responsible for removal, storage and replacement of trash receptacles, bus benches, bus enclosures, newspaper boxes, mail boxes, etc. and coordination with the Owners as required throughout construction. Replacement of the removed items shall be per the direction of the Owner or Engineer.

7-9.5 Protection of Existing Pavement Surfaces from Tack Coat and Oil. When work requires the placement of a tack coat pursuant to Subsection 302-5.4, the Contractor shall protect existing pavement surfaces outside of the work limits from the spreading of tack coat and oil adhering to

truck tires exiting work area. The protected area shall extend the full width of the street and be by either of the following methods:

- 1) The Contractor shall wet the existing pavement surface to a distance of ten (10) feet away from the work limit. The wetted area shall be maintained as such until placement of asphalt concrete pavement is completed; OR
- 2) The Contractor shall provide a thin spreading of sand or rock dust material to a distance of five (5) feet away from the work limit. The sand or rock dust area shall be maintained as such until placement of asphalt concrete pavement is completed. The Contractor shall be responsible to remove the sand or rock dust immediately after the placement of asphalt concrete pavement is completed.

7-9.6 Curb Addresses. The Contractor shall be responsible to repaint addresses (4-inch high black numbers on white background) on curb faces when printed addresses have been removed due to curb construction.

7-10 PUBLIC CONVENIENCE AND SAFETY

7-10.1.2 Vehicular Access. Replace with the following:

The Contractor's operations shall cause no unnecessary inconvenience. The access rights for the public shall be considered at all times. Unless otherwise authorized, traffic shall be permitted to pass through the Work, or an approved detour shall be provided.

Safe and adequate vehicular access shall be provided and maintained to: fire hydrants; commercial and industrial establishments; churches, schools and parking lots; service stations and motels; hospitals; police and fire stations; and establishment of similar nature. Access to these facilities shall be continuous and unobstructed unless otherwise approved by the Engineer.

Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access. When the Contractor begins excavation of a residential driveway, safe access shall be provided within 4 hours and not later than the end of the same workday in which excavation began.

The Contractor shall provide the necessary measures to prevent public access to private residences during removal and replacement of existing barrier structures, such as wood and chain link fences, during non-working hours.

The Contractor shall be responsible to provide at least 48 hours written notice to each affected property before closing or partially closing any driveway or pedestrian access.

Unless the Contractor makes other arrangements satisfactory to the owners, the Contractor shall provide and maintain safe, adequate vehicular access to places of business and public gathering as stated herein below:

- (a) For each establishment (such as, but not limited to, gas stations, markets, and other "drive-in" business) on the corner of an intersection, which has a driveway (or driveways) on each intersecting street, the Contractor shall provide vehicular access to at least one driveway on each intersecting street insofar as the access is affected by the Contractor's operations.

- (b) For each establishment (such as, but not limited to, motels, parking lots and garages) which has a one-way traffic pattern with the appropriate entrance driveway and exit driveway, the Contractor shall provide vehicular access to the entrance driveway and the exit driveway insofar as the access is affected by the Contractor's operations.
- (c) The Contractor shall provide vehicular access to all schools and parking lots including, but not limited to, apartment building parking lots.
- (d) The Contractor shall provide vehicular access to all establishments requiring such access for receiving or delivering materials or supplies.
- (e) The Contractor shall make every reasonable effort to provide maximum access to churches on their Sabbath days. In addition, the Contractor shall not park or store equipment at the site of a church on its Sabbath days.
- (f) At least three (3) days prior to starting work in any location, the Contractor shall distribute written notices to all homeowners and residents that will be impacted by the work. The City will provide the notice.
- (g) The Contractor shall provide a minimum 1-inch thick temporary asphalt surface for an access ramp or sidewalk if it is not able to install the permanent improvement within 5 working days following the removal of the existing material at any location. The offset at any transverse or longitudinal joint shall not be more than one-half (1/2) inch. On the temporary asphalt surface: the running slope shall not exceed 1:20; the cross slope shall not exceed 1:50. The Contractor shall not be allowed any additional compensation for the installation and removal of temporary asphalt.
- (h) The Contractor shall protect the work from traffic. Should the slurry seal be damaged, the Contractor shall provide satisfactory repairs at no cost to the City.

Should any change in these requirements be necessitated by extraordinary occurrences or requirements during the execution of the Work, the Contractor shall obtain prior written approval of the Engineer.

Unless otherwise authorized, work shall be performed in only one-half the roadway at one time. One half shall be kept open and unobstructed until the opposite side is ready for use. If one-half a street only is being improved, the other half shall be conditioned and maintained as a detour.

All costs associated with the above requirements shall be included in the Contract Unit Price for "Traffic Control and Construction Phasing" and "Traffic Control for Sewer Rehabilitation".

7-10.1.3 Pedestrian Access. Replace the entire subsection with the following:

The Contractor's operations shall cause no unnecessary inconvenience. The access rights for the public shall be considered at all times, unless otherwise approved by the Engineer.

Safe and adequate pedestrian access shall be provided and maintained to: fire hydrants; commercial and industrial establishments; churches, schools and parking lots; service stations and motels; hospitals; police and fire stations; and establishment of similar nature. Access to these facilities shall be continuous and unobstructed unless otherwise approved by the Engineer.

Safe and adequate pedestrian zones and public transportation stops, as well as pedestrian crossings of the Work at intervals not exceeding 300 feet, shall be maintained unless otherwise approved by the Engineer.

All costs for the above requirements shall be included in the Contract Unit Price for TRAFFIC CONTROL.

7-10.2 Work Area Traffic Control

Add the following subsections:

7-10.2.1 General. Add the following:

Minimum Requirements for Maintaining Traffic Flow. The Contractor shall observe the following minimum requirements:

- a) Unless otherwise shown on the Traffic Control Plans, permitted by this Contract or authorized by the Engineer, all roadways, driveways, travel and turning lanes, sidewalks and access ramps shall remain open at all times.
- b) The Contractor shall provide adequate steel plating to cover and protect a newly poured PCC cross gutter with spandrels and integral curb in order to allow traffic flow and not close a street. A minimum lane width of 14 feet shall be provided over the steel plating.
- c) At a minimum, the Contractor shall maintain one (1) ten (10) foot-wide lane open in each direction between the hours of 8:30 a.m. and 3:30 p.m. All travel lanes shall be kept open all other times.
- d) Any travel lane adjacent to the curb and within the work zone shall be, at a minimum, a twelve (12) foot-wide lane.
- e) Reduction in lane requirements may be afforded only with prior written approval from the Engineer.
- f) Traffic signs, flaggers, warning devices, safety traffic devices and, on select streets, electronic arrow boards for diverting and directing traffic shall be furnished, installed and maintained by the Contractor throughout the project.
- g) The Contractor must provide access through the work zone in non-working hours by means of temporary ramps. Open trenches shall either be covered by steel plates, or ramped with crushed miscellaneous base. No drop-off at either transverse or longitudinal joints shall be allowed at any time. Temporary ramps, including those for driveway access, shall be constructed with either crushed miscellaneous base or temporary asphalt, as appropriate, with a minimum of 1" to 12" slope in both longitudinal and transverse directions.

All costs for the above requirements shall be included in the Contract Unit Price for "Traffic Control and Construction Phasing" and "Traffic Control for Sewer Rehabilitation".

Temporary Pavement Markings. If permanent pavement markings cannot be restored by the end of the work shift in which they were obliterated, temporary markings shall be provided by the Contractor prior to leaving the Work site on all streets except any street closed to through traffic. These temporary markings shall be as follows:

Temporary lane lines and/or centerlines shall consist of day/night reflectorized raised pavement markers, approved by the Engineer, spaced approximately twenty-four (24) feet apart. A list of approved day/night reflectorized raised pavement markers may be obtained from the CITY.

Where approved by the Engineer, the Contractor may use reflectorized lines approximately twenty-four (24) inches long and four (4) inches wide, spaced approximately twenty-four (24) feet apart.

Right edge lines shall not be simulated with dashes or pavement markers; however, portable delineators, guide markers, etc., may be used by the Contractor where it is considered desirable to enhance the edge of traveled way due to curvilinear alignment, narrowing pavement, etc., and shall be used when directed by the Engineer.

Locations where no-passing zone centerline delineation has been obliterated shall be posted by the Contractor with a sign package consisting of a **W20-1 "ROAD WORK AHEAD"** and **SC13 "DO NOT PASS"**.

All temporary pavement markings and signs shall be maintained, or replaced as necessary by the Contractor, until permanent pavement markings are restored.

All costs associated with the above requirements shall be included in the Contract Unit Price for "Traffic Control and Construction Phasing" and "Traffic Control for Sewer Rehabilitation".

Temporary Pavement Markers/Delineation. Temporary pavement delineation shall be furnished, placed, maintained and removed in accordance with the provisions of Section 12-3.01, of the Caltrans Standard Specifications. Nothing in these Special Provisions shall be construed as to reduce the minimum standards specified in the Manual of Traffic Controls published by Caltrans or as relieving the Contractor from responsibility as provided in 7-10 of these Special Provisions.

Whenever the work causes obliteration of pavement markers and/or delineation, the Contractor shall set in place temporary pavement markers/delineation prior to opening the traveled way to traffic. All pavement markers/delineation, including but not limited to lane lines, centerlines, directional arrows, pavement legends, etc, shall be provided at all times for traveled ways open to traffic.

All work necessary to establish temporary pavement markers/delineation shall be performed by the Contractor. Surfaces on which temporary pavement delineation is to be applied shall be cleaned of all dirt and loose material and shall be dry when the pavement delineation is applied. Temporary pavement markers/delineation shall not be applied over existing pavement delineation or other temporary pavement delineation.

Temporary pavement markers/delineation shall be maintained until replaced with permanent pavement markers/delineation. Temporary pavement delineation shall be removed when 1) it conflicts with the permanent pavement delineation; 2) a new traffic pattern is established or 3) as determined by the Engineer.

Temporary pavement delineation shall consist of temporary reflective raised pavement markers placed on lane lines and centerlines at longitudinal intervals of not more than 24 feet apart. Temporary reflective raised markers shall be the same color as the lane line or centerline the markers replace. Temporary reflective raised pavement markers shall be, at the option of the Contractor, one of the following or approved equal:

Apex Universal Product No. 2SCSM-1W or 2SCSM-2Y markers manufactured by Apex Universal, 11033 Forest Place, Santa Fe Springs, CA 90607, Telephone (562) 944 8878.

Flex-O-Lite Raised Construction Marker (RCM), manufactured by Flex-O-Lite, Lukens Company, P.O. Box 4366, St. Louis, MO 63123-0166, Telephone (800) 325-9525.

Temporary reflective raised pavement markers shall be placed as directed by the Engineer. Temporary reflective raised pavement markers shall be applied to the pavement surface with the adhesive in accordance with the manufacturer's instructions. Epoxy adhesive shall not be used to apply temporary reflective raised pavement markers in areas where the pavement will not be removed.

Temporary lane line or centerline delineation consisting of temporary reflective raised pavement markers placed on longitudinal intervals of not more than twenty-four (24) feet, shall be used on lanes opened to public traffic for a maximum of fourteen (14) days. Prior to the end of the fourteen (14) days the planned permanent pavement delineation, except permanent pavement markers, shall be placed. If the planned permanent pavement delineation, exclusive of permanent pavement markers, is not placed within fourteen (14) days, the Contractor shall provide, at its expense, additional temporary pavement delineation as directed by the Engineer. The additional temporary pavement delineation to be provided shall be equivalent to the pattern specified for the permanent traffic lines as determined by the Engineer.

Full compensation for furnishing, placing, maintaining, and removing the temporary pavement markers/delineation shall be considered as included in the Contract Unit Price for "Traffic Control and Construction Phasing" and "Traffic Control for Sewer Rehabilitation".

Temporary "No Parking" Signs. The Contractor is responsible to post "Temporary No Parking" signs at least forty-eight (48) hours in advance of the first date of work and the required enforcement. If work is to begin on either a Monday or Tuesday, the Contractor shall post the signs on a Friday. Each sign must include text indicating the beginning and end dates and the hours in effect. "Tow-Away" and "No Parking" must be shown on each sign face. If it is required to temporarily restrict parking 24 hours/day then "Tow-Away" and "No Parking Anytime" must be shown on each sign face. The signs shall be mounted on either 1" x 2" X 3' high wood stakes, Type II barricades, or 39-inch high delineators. Signs shall be spaced at approximately 100' intervals on the effected side(s) of the street. Signs shall not be posted on trees, traffic signal poles, utility poles, street lights, or any other street furniture.

Signs shall be professionally made of moisture-resistant, heavy duty cardboard or other approved material. All signs shall be maintained by the Contractor and kept free of graffiti. Any sign that becomes illegible or is removed shall be replaced within twenty-four (24) hours. The Contractor shall only be permitted to restrict parking for the minimum time necessary to complete on-going work. The Contractor shall be responsible to remove and repost "Temporary No Parking" signs when work will be delayed for more than five (5) consecutive days, or if the work must go beyond the end date shown on the signs, or otherwise directed by the Engineer.

The Contractor shall obtain approval for the signs and the placement thereof from the Engineer. Immediately after this approval and posting, the Contractor shall notify Torrance Police Department, Traffic Division, at (310) 618-5557 for review and enforcement. The parking restriction cannot be enforced until the signs have been in place 48 hours and the Police notified.

The Contractor shall maintain said signs through the day of work, and shall remove all of said signs on or within one (1) calendar day of the completion of work within the restricted parking area.

If, in the event a street scheduled for slurry or cape sealing was missed, the Contractor shall immediately remove all "No Parking" signs and notify all residents and others previously notified, with printed notices, that due to unforeseen circumstances, the Contractor was not able to seal the street as previously notified, that the street will be rescheduled in approximately 1 to 2 weeks, and that they will be re-notified. The Contractor shall, on the job site prior to the start of each day's work, have an adequate supply of approved letters of notification to residents for missed streets.

Full compensation for furnishing, placing, maintaining and removing temporary signs shall be considered as included in the Contract Unit Price for "Traffic Control and Construction Phasing" and "Traffic Control for Sewer Rehabilitation".

Holiday Moratorium. No reduction in lane widths on any major street shall be permitted during the CITY's holiday period construction moratorium, which begins on the Monday prior to Thanksgiving and ends on the Friday following New Year's Day. No traffic signal shall be out of operation for any period of time during said moratorium.

Trash Pick-Up. Trash pick up days are established and will not be changed. Consult the Engineer regarding trash pick up schedule. The Contractor shall ensure streets and alleys affected by the work are accessible to the CITY's automated trash trucks on designated pick up days. In alleys, Contractor shall be responsible to provide and maintain access to large trash containers during the course of the work.

Protection of Permanent Pavement Markings, Manholes, Valves. The Contractor shall, in areas outside of the work zone, protect existing raised pavement markers, thermoplastic legends and markings. The Contractor shall protect existing valve and manhole covers, utility caps, and similar items from damage.

The contractor shall be responsible for replacing or restoring any damaged items to the satisfaction of the Engineer.

Full compensation for complying with the work contained in this section shall be included in the contract bid price for "Traffic Control and Construction Phasing" and "Traffic Control for Sewer Rehabilitation" per lump sum (LS). Payment shall include all labor, tools, equipment, materials and incidentals necessary to complete the work and no additional compensation will be allowed therefore.

Street Closures, Detours, Barricades. The contractor shall comply with all applicable State, County and City requirements for closure of streets. The Contractor shall provide barriers, guards, lights, signs, temporary bridges, flagpersons, and watch persons. The Contractor shall be responsible for compliance with additional public safety requirements which may arise. The Contractor shall furnish and install signs and warning devices and promptly remove them upon completion of the Work.

In addition to the requirements of this subsection, the Contractor shall conform to the requirements for street closures, detours, and barricades as stipulated in the Special Provisions. However, deviations from the requirements stipulated in the Special Provisions may be permitted upon written approval of the Public Works Director when such deviations are in the best interest of the City.

The Contractor shall notify the Public Works Department at (310) 781-6900, at least ten (10) working days in advance of closing or partially closing any street or alley and comply with their requirements. In addition, the Contractor shall notify the Torrance Police Department at (310) 328-3456 and Torrance Fire Department at (310) 781-7042 at least two (2) working days in advance of such closing.

It shall be the Contractor's responsibility to allow passage of the Palos Verdes Peninsula Transit Authority coaches through the construction area at all times. The Contractor shall notify the

Palos Verdes Peninsula Transit Authority at (310) 544-7108 at least 48 hours prior to construction affecting bus stop zones to allow said Transit System to temporarily abandon and relocate bus stop zones within the construction area.

The Contractor shall immediately notify the above parties upon completion of the construction work and opening or reopening of any street or alley.

The Contractor shall secure approval, in advance, from authorities concerned for the use of any bridges proposed by it for public use. Temporary bridges shall be clearly posted as to load limit, with signs and posting conforming to current requirements covering "signs" as set forth in the Traffic Manual published by the California Department of Transportation. This manual shall also apply to the street closures, barricades, detours, lights and other safety devices required.

All costs involved shall be included in the Bid.

The Contractor shall install, maintain, and remove all temporary delineators, barricades, lights, warning signs and other devices necessary to control traffic as specified in the project plans and these specifications. Materials for a temporary facility may be provided from new or used materials. If used materials are provided, they shall be sound, in good condition and otherwise meet the requirements of new materials. All traffic control devices shall be free of graffiti, and the Contractor shall be responsible to immediately clean and/or replace any device to the satisfaction of the Engineer.

Full compensation for furnishing, installing, maintaining and removing the above traffic control devices shall be considered as included in the Contract Unit Price for Traffic Control and Traffic Control for Sewer Rehabilitation.

Where streets in which improvements are being constructed are specified hereinafter to be closed to through traffic, it shall be understood that such closures shall apply only to the portions of such streets where construction is actually in progress.

After award of the contract, the Contractor shall submit to the City its proposed Traffic Control Plan as required by the Special Provisions and to comply with the requirements specified herein. This submittal shall be made sufficiently in advance (street closure schedules MUST be submitted ten (10) days prior to closing the affected street) of any rerouting or diversion of traffic by the Contractor to allow for a review of the Contractor's proposed traffic control by the Public Works Director.

The Contractor shall submit to the Public Works Director detailed plans prepared by a Registered Civil Engineer of all temporary bridges proposed for use on this project. This includes bridges which may have been used on previous projects. The Contractor shall allow 15 days for approval by the Engineer. The drawings shall indicate specific locations where the bridge is to be used. Bridges shall not be installed until such time as written approval is obtained from, and the bridge is inspected by, the Public Works Director.

The Contractor shall conform to Section 74.6.8 of the Torrance Municipal Code. In addition, the Contractor shall comply with directions from the Engineer to provide protection at excavations, trenches and/or other potentially hazardous construction areas. The Contractor shall be required to erect temporary railing (Type K) per Caltrans Standard Plan T3, five-foot high chain link fences, or equivalent protection, to completely enclose all open excavations over three feet (3') in depth. Fencing shall be approved by the Engineer, and provide adequate security. Fencing may be removed during working hours to the extent necessary to provide access and working room, in which case the Contractor shall provide equivalent security, to the satisfaction of the Engineer, during said periods. Any excavation not secured to the satisfaction of the Engineer shall be completely backfilled prior to the end of each day's construction activities. The Engineer may require additional security devices, lighting or other protection in addition to said fencing. Full

compensation for furnishing, placing and removing temporary protection shall be considered as included in the price for the various items of work.

7-10.2.2 Traffic Control Plan (TCP) Add the following:

The approved TCP included in the Contract shall be strictly adhered to, and the Contractor hereby understands and agrees that its failure to provide any facility or device as shown on the TCP, or its deviation from said Plan, unless otherwise approved by the Engineer shall constitute a breach of Contract.

Traffic Control shall be in accordance with the California Manual of Uniform Traffic Control Devices (CA MUTCD), Latest Edition, and shall be approved by the City Engineer. It shall be understood that the provided traffic control and phasing plans are general in nature and do not address every conceivable construction phase or public transit requirement. The Contractor shall take care to implement additional measures as necessary to provide for specific work locations and access requirements. It is expected that some phases of work, especially in intersections, will require the use of flagmen for short durations, which the Contractor shall provide as deemed necessary for safety.

For sewer repairs on Palos Verdes Boulevard, the project traffic control plans for the phasing identified for utilities shall be followed. For sewer repairs including, but not limited to those on Via Monte d'Oro, Calle Miramar, 5110 Torrance Boulevard and 1907 235th Place, the contractor shall utilize City Standard Plans where applicable. Should the standard plans not apply, the contractor shall submit a legible, detailed TCP on one or more 24" x 36" reproducible plan sheets which shall clearly show and/or describe all proposed lights, warning signs, barricades, delineators, temporary lane markings, temporary traffic signals or signs, and any and all other facilities proposed to be installed. Said TCP shall be prepared by a Registered Civil and Traffic Engineer and shall show all lane closures, restrictions, tapers and other disruptions of normal traffic flow, including pedestrian and vehicular detours. A schedule and/or sequencing diagram shall be included. Said TCP may be drawn on a sepia or other transparent copy of the Plans. Said TCP shall be submitted to the Engineer for approval no later than two (2) weeks after the award of Contract. It shall be the Contractor's responsibility to immediately revise said Plan at the direction of the Engineer, and the Contractor hereby agrees that such changes shall not constitute a claim for extra work or additional costs. The approved TCP shall be strictly adhered to, and the Contractor hereby understands and agrees that its failure to provide any facility or device as shown on the TCP, or its deviation from said Plan, shall constitute a breach of Contract.

The Contractor is hereby informed that for all lane closures required prior to the application of the AC surface course, the Contractor must provide reflectorized drums and not cones or delineators for all tapers, tangents and channelization.

On the day the Contractor installs the AC surface course, the Contractor shall remove the reflectorized drums and replace with reflectorized delineators or 28" traffic cones only. Reflectorized drums shall be prohibited as traffic control devices on the AC surface course.

The Contractor shall install four (4) changeable message boards, per section 7-15 of these Specifications, in a location leading up to the project area, and as designated by the Engineer, commencing at least one week prior to, and maintained throughout, the construction period. The displayed message shall be maintained and updated throughout construction, and shall advise of construction schedule, route recommendations, and site safety. Actual messages shall be approved by the Engineer and updated as directed.

Traffic control devices and signs shall be in place prior to the beginning of any onsite construction related activities. The Contractor shall provide notification of any planned street closures or restrictions which affect public safety vehicles and site access, and coordinate work notifications with the Police Department, Fire Department, Caltrans, adjacent cities, transit agencies, and schools.

The Contractor shall allow residents on the streets to park within a reasonable distance from their homes. The Contractor shall notify residents and businesses of the work and post temporary "No Parking" signs at least 48 hours prior to the implementation of parking restrictions and the scheduled paving of the streets affected.

The Contractor shall be responsible for adequate barricading of the work area and controlling of traffic in the vicinity of the project as specified in 7-10 in the Standard Specifications or as directed by the Engineer.

Closures and parking restrictions shall only be made for the amount of time necessary to complete construction activities. Areas that do not have active construction work shall be secured and reopened as directed by the Engineer. Extents of closures and parking restrictions shall be limited to areas as necessary for immediate construction activities.

When necessary to provide vehicular or pedestrian crossings over fresh pavement, the Engineer shall direct the Contractor to spread sufficient sand or rock dust on the affected area to eliminate tracking or damage to the slurry. Sand or rock dust used for this purpose shall be at the Contractor's expense.

The Contractor's operations shall cause no unnecessary inconvenience. The access rights of the public shall be considered at all times. Unless otherwise authorized, traffic shall be permitted to pass through the Work, or an approved detour shall be provided.

Safe and adequate pedestrian and vehicular access shall be provided and maintained to: fire hydrants; commercial and industrial establishments; churches, schools, and parking lots; service stations and motels; hospitals; police and fire stations; and establishments of similar nature. Access to these facilities shall be continuous and unobstructed unless otherwise approved by the Engineer.

Safe and adequate pedestrian zones and public transportation stops, as well as pedestrian crossings of the Work at intervals not exceeding 90m (300 feet), shall be maintained unless otherwise approved by the Engineer.

Vehicular access to residential driveways shall be maintained to the property line except when necessary construction precludes such access for reasonable periods of time. If backfill has been completed to the extent that safe access may be provided, and the street is opened to local traffic, the Contractor shall immediately clear the street and driveways and provide and maintain access.

The Contractor shall cooperate with the various parties involved in the delivery of mail and the collection and removal of trash and garbage to maintain existing schedules for these services.

Grading operations, roadway excavation and fill construction shall be conducted by the Contractor in a manner to provide a reasonably satisfactory surface for traffic. When rough grading is completed, the roadbed surface shall be brought to a smooth, even condition satisfactory for traffic.

7-10.2.3 Payment. Replace the entire section with the following:

Full compensation for complying with the submittal requirements, furnishing, placing and removing traffic control shall be on a lump sum (LS) basis per the Contract Unit Price for "Traffic Control and Construction Phasing" and "Traffic Control for Sewer Rehabilitation".

"Traffic Control and Construction Phasing" shall be prorated on a monthly basis through the duration of the project.

"Traffic Control for Sewer Rehabilitation" shall be paid at the same rate as the amount of sewer work completed.

7-10.5.3 Steel Plate Covers. Add the following:

When backfilling operations of an excavation in the traveled way, whether transverse or longitudinal cannot be properly complete within a work day, steel plate bridging with a non-skid surface and shoring may be required to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:

1. Steel plate used for bridging shall extend a minimum of 12-inches beyond the edges of the trench.
2. Steel plate bridging shall be installed to operate with minimum noise.
3. The trench shall be adequately shored to support the bridging and traffic loads.
4. Temporary paving with cold asphalt concrete shall be used to feather the edges of the plates, if plate installation by Method (2) described below, is used.
5. Bridging shall be secured against displacement by using adjustable cleats, shims, or other devices.

Steel plate bridging and shoring shall be installed using either the following Method (1) or Method (2):

Method (1) (For speeds more than 45 mph)

The Pavement shall be cold planed to a depth equal to the thickness of the plate and width and length equal to the dimensions of the plate.

Method (2) (For speeds 45 mph or less)

Approach plate(s) and ending plate (if longitudinal placement) shall be attached to the roadway a minimum of two (2) dowels pre-drilled into the corners of the plate and drilled 2-inches into the pavement. Subsequent plates are butted to each other. Fine grade asphalt concrete shall be compacted to form ramps, maximum slope of 8.5% with a minimum 12- inches taper to cover all edges of the steel plates. When steel plates are removed, the dowel holes in the pavement shall be backfilled with either graded fines of asphalt concrete mix, concrete slurry or an equivalent slurry that is satisfactory to the City and/or Caltrans.

The Contractor shall be responsible for maintenance of the steel plates, shoring and asphalt concrete ramps.

The following table shows the advisory minimal thickness of steel plate bridging required for a given trench width (A-36 grade steel, designed for HS20-44 truck loading).

<u>Trench Width</u>	<u>Minimum Plate Thickness</u>
10"	1/2"
1'-11"	3/4"
2'-7"	7/8"
3'-5"	1"
5'-3"	1 1/4"

For spans greater the 5'-3" a structural design shall be prepared by a California registered civil engineer.

All steel plates within the right-of-way whether used in or out of the travel way shall be without deformation. Steel plates shall be non-skid. Advanced signs shall be required for steel plates within traveled ways (Type P per the Watch Manual or a Rough Road sing (W33) per Caltrans requirements).

All costs associated with the above requirements shall be included in the Contract Unit Price for "Traffic Control and Construction Phasing" and "Traffic Control for Sewer Rehabilitation".

Add the following section:

7-15 PROJECT CONSTRUCTION SIGNS AND PORTABLE CHANGEABLE MESSAGE SIGNS.

The Contractor shall furnish and install two (2) Project Construction Signs at locations to be determined by the Engineer. The signs shall be in accordance with the sample shown in Appendix VIII.

The Contractor shall furnish and install four (4) Portable Changeable Message signs (PCMS) on the construction site for use and relocation during construction. The City will allow only the following PCMS manufactures and models:

1. Manufactured by **Solar Tech** and be model MB2.
2. Manufactured by **ADDCCO** and be model DH500-ALS.
3. Manufactured by **WANCO** and be model WVT3 Mini Three-Line Message.

Contact BC Rentals at (714) 575-5020 or via <http://bctrffic.com/message-boards.htm> for rental or purchase information.

The Contractor shall install a locking device on each PCMS to prohibit access to the computer keyboard. The Contractor shall provide to the Engineer the key or combination to each locking device and the computer password to each PCMS **OR** possess any equipment, on any working day, to enter or modify a message for each PCMS as directed by the Engineer. The Contractor shall relocate each PCMS as directed by Engineer at no additional cost to the City.

7-15.1 Payment. Full compensation for furnishing, installing, maintaining, entering/modifying message screens, relocation on the job site and removal shall be included in the Contract Unit Price for "Traffic Control and Construction Phasing" and "Traffic Control for Sewer Rehabilitation". If the Contractor does not possess the equipment or tools, or fails on any working day, to enter or modify a message for a PCMS, the Engineer may deduct \$50 per day, per each PCMS, from a Progress Payment until said message is entered or modified.

Provide to the City KEYS AND PASSWORD TO ACCESS KEYBOARD.

SECTION 9 - MEASUREMENT AND PAYMENT

9-1 MEASUREMENT OF QUANTITIES FOR UNIT PRICE WORK.

Add the following subsections:

9-1.2.1 Payment for Labor and Materials

The Contractor shall pay and cause the subcontractors to pay any and all accounts for labor, including Worker's Compensation premiums, State Unemployment and Federal Social Security payments and all other wage and salary deductions required by law. The Contractor also shall pay and cause the subcontractors to pay any and all accounts for services, equipment and materials used by it and the subcontractors during the performance of work under this contract. All such accounts shall be paid as they become due and payable. If requested by the Engineer, the Contractor shall immediately furnish the City with proof of payment of such accounts.

9-1.2.2 Measurement and Payment

Payment of each item will include full compensation for furnishing all labor, materials, tools, equipment and backup equipment; transportation and technical competence for performing all work necessary to complete each item as indicated on the plans and as specified in these Contract Documents, including but not limited to obtaining all applicable certifications necessary for specialty personnel and major equipment in conformance with Subsection 7-5, and all other applicable permits; securing a storage yard to store all equipment and materials to be used on the job, disposal of waste materials, restoration of the site, etc. The storage yard may also be used as a temporary storage for excavated materials, and traffic control items.

9-2 LUMP SUM WORK.

Replace the second paragraph with the following:

The Contractor shall, within five (5) working days of receipt of a request from the Engineer, submit a complete breakdown of lump sum bid prices showing the value assigned to each part of the work, including an allowance for profit and overhead. In submitting the breakdown, the Contractor certifies that it is not unbalanced and that the value assigned to each part of the work represents its estimate of the actual cost, including profit and overhead, of performing that part of the work. The breakdown shall be sufficiently detailed to permit its use by the Engineer as one of the bases for evaluating requests for payment. No extra costs shall be allowed for providing these breakdowns.

9-3 PAYMENT

9-3.2 Partial and Final Payment. Replace the third paragraph with the following:

For each progress estimate, 5 percent will be deducted and retained by the CITY, and the remainder less the amount of all previous payments will be paid. In addition, 125% of the amount of outstanding "Stop Notices" shall be withheld.

Add the following:

The Contractor shall submit all requests for payment on a Progress Payment Invoice.

Prior to submittal of said invoice, all items for which payment is requested shall be checked and

approved in writing by the Engineer. No payments will be made unless all back-up data is submitted with the payment request and the Progress Payment Invoice is signed by both Contractor and Engineer.

9-3.4 MOBILIZATION. Replace the entire subsection with the following:

Mobilization shall include the provisions of the Construction Schedule; Sewage Spillage Prevention; Emergency Response Plan; site review; obtaining all permits, insurance, and bonds; moving onto the site all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities, and removal of same at completion of the Work; and other work, all as required for the proper performance and completion of the Work, as further defined below.

Mobilization shall include, but not be limited to, the following items:

- (a) Submittal and modification, as required, of the Construction Schedule.
- (b) Moving on to the site of all Contractor's plant and equipment required for the first month's operations.
- (c) Installing temporary construction power and wiring.
- (d) Establishing fire protection system.
- (e) Developing construction water supply.
- (f) Providing on-site sanitary facilities and portable water facilities, as required.
- (g) Arranging for and erection of Contractor's work and storage yard.
- (h) Submittal of all required insurance certificates and bonds, including subcontractors.
- (i) Obtaining all required permits.
- (j) Posting all OSHA required notices and establishment of safety programs.
- (k) Potholing and other research and review as necessary to verify site conditions and utility locations.
- (l) Having the Contractor's Superintendent present at the job site full-time.
- (m) Removal (including all spray-painted markings on any surface), cleanup, and restoration.

The contract bid item for Mobilization shall include all labor, equipment, tools, work and materials necessary to mobilize and demobilize forces, equipment, and material; obtain bonding, insurance, permits, licenses, preparation of a conditions survey, and other work as necessary to facilitate the construction operation. Mobilization costs shall not exceed 5% of the total bid amount. The bid item shall also include for the protection and/or repair of any existing or new elements damaged as a result of the construction activities or public use. This item shall also include for all costs associated with site security and protection for the duration of the construction phase.

Payment shall be per lump sum amount as follows:

When 5% of the work other than mobilization has been constructed, then 20% of the mobilization item will be paid. The remaining balance will be prorated on a monthly basis over the course of the project, with final payment at 100% construction.

Full compensation for complying with the work contained in this section shall be included in the Contract Bid Price for "Mobilization" per lump sum (LS). Payment shall include all labor, tools, equipment, materials and incidentals necessary to complete the work, and no additional compensation will be allowed therefore.

Add the following subsection:

9.3-5 Noncompliance with Plans and Specifications

Failure of the Contractor to comply with any requirement of the Plans and Specifications, and/or to immediately remedy any such noncompliance upon notice from the Engineer, may result in suspension of Contract Progress Payments. Any Progress Payments so suspended shall remain in suspension until the Contractor's operations and/or submittals are brought into compliance to the satisfaction of the Engineer. No additional compensation shall be allowed as a result of suspension of Progress Payments due to noncompliance with the plans or specifications. The Contractor shall not be permitted to stop work due to said suspension of Progress Payments.

Add the following Section 9-4:

9-4 CLAIMS.

The Contractor shall not be entitled to the payment of any additional compensation for any cause, including any act, or failure to act, by the CITY, or the happening of any event, thing or occurrence, unless the Contractor shall have given the CITY due written notice of potential claim as hereinafter specified.

The written notice of potential claim shall set forth the reasons for which the Contractor believes additional compensation will or may be due, the nature of the costs involved, and, insofar as possible, the amount of the potential claim. Said notice shall be submitted on a form approved by the CITY at least forty-eight (48) hours (two working days) in advance of performing said work, unless the work is of an emergency nature, in which case the Contractor shall notify and obtain approval from the Engineer prior to commencing the work. The Engineer may require the Contractor to delay construction involving the claim, but no other work shall be delayed, and the Contractor shall not be allowed additional costs for any said delay but may be allowed an extension of time if the Engineer agrees that the work delayed is a controlling element of the Construction Schedule. The Contractor shall be required to submit any supporting data (or a detailed written explanation justifying further delay) within five (5) work days of a request from the Engineer and shall be responsible for all costs associated with any delays resulting from late and/or incomplete submittals. By submitting a Bid, the Contractor hereby agrees that this subsection shall supersede 6-6.3 and 6-6.4 of the Standard Specifications.

It is the intention of this subsection that differences between the parties arising under and by virtue of the Contract be brought to the attention of the Engineer at the earliest possible time in order that such matters may be settled, if possible, or other appropriate action promptly taken. The Contractor hereby agrees that it shall have no right to additional compensation for any claim that may be based on any such act, failure to act, event, thing or occurrence for which no written notice of potential claim as herein required was timely filed.

PART 2 - CONSTRUCTION MATERIALS

SECTION 200 – ROCK MATERIALS

200-2 UNTREATED BASE MATERIALS

200-2.1 General. Replace the entire subsection with the following:

Untreated base for pavement, curb, gutter, cross gutters, hardscape and other improvements, as shown on Plans, shall be Crushed Miscellaneous Base (CMB) conforming to 200-2.4.

200-2.4 Crushed Miscellaneous Base. Add the following:

Payment for Crushed Miscellaneous Base shall be included as incidental in all work items requiring such, and no additional compensation will be allowed. CMB shall conform to the requirements as per SSPWC.

SECTION 203 – BITUMINOUS MATERIALS

203-6 ASPHALT CONCRETE

203-6.1 General. Add the following:

Asphalt concrete shall be of the followings classifications:

Type B-PG-64-10 for base paving of pavement repairs

Type C2-PG-64-10 for overlay finish surfaces

Type D2-PG-64-10 for level courses, and driveways

Type D2-PG-64-10 for asphalt walkways

Type ARHM-GG-C for overlay finish surfaces (Alternate Bid)

203-11 ASPHALT RUBBER HOT MIX (ARHM)

203-11.3 Composition and grading. Add the following:

Asphalt rubber hot mix wet process shall be Type ARHM-GG-C (Wet Method)

SECTION 207 – PIPE

207-1 NON-REINFORCED CONCRETE PIPE

207-1.1 General. Add the following as the last paragraph:

Where non-reinforced concrete pipe is specified on the Plans, the Contractor shall have the option of using reinforced concrete pipe with an equivalent D-load at no extra charge. The Contractor shall have the option of using either bell and spigot or tongue and groove pipe.

SECTION 209 – STREET LIGHTING AND TRAFFIC SIGNAL MATERIALS

209-3 COMPONENTS FOR STREET LIGHTING AND TRAFFIC SIGNAL SYSTEMS.

209-3.1 General. Add the following:

Electroliers shall be as shown on the Plans and shall conform to the specifications and requirements of the Edison Company.

SECTION 210 – PAINT AND PROTECTIVE COATINGS

210-1 PAINT

Add the following subsections:

210-1.6 Paint for Traffic Striping, Pavement Marking, and Curb Marking

210-1.6.1. General. Add the following:

All permanent striping and pavement markings shall be hot applied alkyd thermoplastic in accordance with the provisions of Section 84-2.02 of the Caltrans Standard Specifications.

210-1.6.2. Thermoplastic Paint, State Specifications.

Thermoplastic traffic stripes and pavement markings shall conform to the provisions of Section 84 of the Caltrans Standard Specifications. Contractor shall paint a solid black stripe between all double thermoplastic striping.

Add the following subsections:

210-1.7 Test Reports and Certifications

At the time of delivery of each shipment of material, the Contractor shall, upon request, deliver to the Engineer certified copies of manufacturer's test report. The test report shall indicate the name of manufacturer, type of material, date of manufacture, quantity, State Specification number, manufacturer's lot or batch number, and results of the required tests. The test report shall be signed by an authorized representative of the manufacturer. The certified test reports and the testing required in connection therewith shall be at no cost to the CITY.

210-1.8 Paint for Exterior Surfaces of Ductile Iron Pipe. The exterior surfaces of ductile iron pipe, fittings, valves and appurtenances that will be exposed to the atmosphere inside structure or above ground shall be painted with three coats of "Rustoleum No. 7773" or approved equal. The final coat color shall be selected by Engineer or identified on plans. Total thickness of coating shall be 6 mils.

210-1.9 Coating for Valves. Except as otherwise provided, all ferrous surfaces (excluding non-corrosive surfaces) in water passages of all valves 4-inches and larger shall be fuse coated with an epoxy coating in accordance with the "Standard for Protective Epoxy Interior Coatings for Valves and Hydrants" (AWWA C550).

210-1.10 Painting and Coating of Reclaimed Water Valves. Metal valves (except bronze and stainless steel valves) located in vaults and structures shall have a zinc prime coat, fusion epoxy (interior of valves only) intermediate and finish coat.

210-1.10.1 Surface Preparation. Surface preparation shall conform to the following requirements:

Prime Coat: Self-curing, two-component inorganic zinc rich coating recommended by the manufacturer for overcoating with a epoxy finish coat. Minimum zinc content shall be 14 pounds per gallon. Apply to a thickness of 3 mils. Products: Tnemec N90E92, Porter 311 Zinc-Lock, Ameron Dimetcote 9, or approved equal.

Intermediate and Finish Coat: 100 percent solids, thermosetting or catalytic, fusion bonded, dry powder epoxy, suitable for the intended service as recommended by the manufacturer, Scotchkote 134 or approved equal.

Valves shall be coated on their interior metal surfaces excluding seating areas and bronze and stainless steel pieces. Sandblast surfaces in accordance with SSPC SP-5. Remove all protuberances, which may produce pinholes in the lining. Round all sharp edges to be coated. Remove any contaminants, which may prevent ponding of the lining. Coat the interior ferrous surfaces using one of the following methods:

- 1) Apply powdered thermosetting epoxy per the manufacturer's application recommendations to a thickness of 10 to 12 mils.
- 2) Apply two coats of catalytically setting epoxy (Keysite 740, Gilpon, or equal) to a dry film thickness of 10 to 12 mils total. Follow the paint manufacturer's application recommendations including minimum and maximum drying time between required coats.

All epoxy lining shall be fusion epoxy applied by the manufacturer. Coat interior surfaces of cast iron valves at the place of manufacturer. Do not coat seating areas and plastic, bronze, stainless steel, or other high alloy parts.

210-1.11 Reclaimed Water Color Coding. It is required that above-ground or exposed facilities be color coded to differentiate reclaimed water facilities from potable water or wastewater facilities as follows:

Valve Box Covers	Two Coats Purple (Pantone 512)
Air Valves and Piping	Two Coats Purple (Pantone 512)
Blow-Offs/Covers	Two Coats Purple (Pantone 512)

210-1.12 Concrete Vaults and Manholes. The interior and exterior of concrete vaults and manholes shall be coated with crystalline waterproofing. Crystalline waterproofing shall be cementitious coating containing components that will diffuse into the concrete by water, react with lime, and create an impervious, waterproof, calcified barrier in the substrate. Technical requirements are as follows:

- 1) Permeability at 2.6×10^{-8} cm/sec (2 coats) minimum per Army (COE CRD-C 48-55 or CRD-6 48-73).
- 2) Compatibility; shall produce no degradation of substrate.

SECTION 212 – LANDSCAPE AND IRRIGATION MATERIALS

212-1 LANDSCAPE MATERIALS.

Add the following:

All work specified in this section shall conform to the applicable requirements of ANSI Standard

Z60.1-1980, "Nursery Stock," and to the rules and grading provisions adopted by the American Association of Nurserymen, Inc.

212-1.1 Topsoil

212-1.1.1 General. Add the following:

Unless otherwise specified on the Plans or required by the Engineer, topsoil shall be Class "C" in accordance with the requirements of 212-1.1.4. Imported soil, if required, shall be Class "A" topsoil in accordance with the requirements of 212-1.1.2.

The Contractor shall provide an Agricultural Soil Suitability Report for topsoil to be furnished, and the requirements for fertilization and amendments as specified herein may be modified as necessary by the Engineer prior to start of the work of this section.

212-1.2 Soil Fertilizing and Conditioning Materials

212-1.2.3 Commercial Fertilizer. Add the following:

Commercial Fertilizer shall be 12-12-12 (N-P-K.) Slow release tablets, if used, shall be 12-12-12 (N-P-K).

212-1.2.4 Organic Soil Amendment. Add the following:

Type I organic soil amendment shall be used. The Contractor shall supply the Engineer with a sample of the proposed amendment accompanied by a laboratory analytical analysis from a testing agency registered by the State, which states that the amendment complies with the specifications.

212-1.2.5 Mulch. Add the following:

Bark mulch shall be shredded cedar, pine, or fir bark or equal commercial product. Typical mulch size shall be three inches by one-half inch (3" x ½"). Submit two (2) samples to the Engineer for approval prior to installation. The material shall be free of seeds, debris, and deleterious materials, and shall have a rich brown color when supplied.

212-1.4 Plants

212-1.4.1 General. Add the following:

All plants furnished by the Contractor shall be true to type or name as shown on the Plans and shall be tagged in accordance with the standard practice recommended by the Agricultural Code of the State of California; however, determination of plant species or variety shall be made by the Engineer, whose decision shall be final.

All plants shall have been grown in nurseries that have been inspected by the governing authorities. Inspection of plant materials required by City, County, State, or Federal authorities shall be the responsibility of the Contractor, and it shall have secured permits or certificates prior to delivery of plants to site. Certificates of inspection shall be filed with the Engineer.

The Contractor shall obtain clearance from the County Agricultural Commissioner, as required by law, before planting plants delivered from outside the County in which they are to be planted. Evidence that such clearance has been obtained shall be filed with the Engineer.

Plants shall be subject to inspection and approval or rejection by the Engineer at place of growth and/or upon delivery to the site at any time before or during progress of the work. Inspections shall include:

- a) Quantity, quality, size, and variety;
- b) Ball and root condition;
- c) Latent defects and injuries resulting from handling, disease and insects; and,
- d) Uniformity of plant materials.

The Contractor shall notify the Engineer forty-eight (48) hours before the delivery of plant material, so the plants can be inspected prior to planting.

The Contractor is responsible to coordinate contract growing any plant material that is not readily available at local nurseries. The Contractor shall research the availability of every plant at the beginning of the project to allow sufficient time to contract grow plant material for installation without delays. Contract grown plant material shall be grown to the size indicated on the plans and delivered to the site in a healthy and vigorous condition.

212-1.4.2 Trees. Add the following:

Trees shall be of the type and size as shown on the Plans or specified in the Specifications.

For single-trunk trees: the trunk shall be straight, slightly tapered at the crown, free of disfigurements or gnarls and well hardened off, 2" caliper trunk, 5' height minimum. The tree shall be free of disease and parasites.

For multi-trunk trees: the trunk shall be well hardened off and the tree free of disease and parasites.

212-1.5 Headers, Stakes, and Ties

212-1.5.3 Tree Stakes. Replace the first paragraph with the following:

Tree stakes shall be either 2-inch diameter lodge pole pine, treated with copper nanthanate or pressure treated with chromated copper arsenate, or galvanized steel pipe, per 308-4.6.1 (Method A) and City of Torrance Standard Plan No. T401 and T402. Root barrier shall not be used.

Add the following:

Tree ties shall be a commercially manufactured tie, split plastic hose with a minimum length of twenty inches (20"). Split plastic hose ties shall be "Cinch-tie" by V.I.T. or approved equal.

212-2 IRRIGATION SYSTEM MATERIALS

NOTE: Materials specified on the landscape plans shall take precedence over these Specifications.

212-2.1 Pipe and Fittings

212-2.1.1 General. Replace the entire subsection with the following:

Irrigation pipe materials and fittings shall be as designated on the Plans and shall comply with 212-2.1.3.

Add the following subsection:

212-2.1.6 Swing Joint Risers. Risers shall be ¾ inch double swing type per APWA Standard Plan No. 517-1 modified to allow substitution of Schedule 80 PVC for galvanized steel pipe and 4" minimum nipples. At the sole discretion of the Engineer, swing pipe per Rainbird Model SP-100 or approved equal may be substituted for swing joint risers.

212-2.2 Valves and Valve Boxes

212-2.2.4 Remote Control Valves. Add the following:

Electric Remote Control Valves shall be Rainbird #PEB or approved equal.

212-2.2.6 Quick-coupling Valves and Assemblies. Add the following:

Quick couplers shall be Rainbird Model No. 44-LRC or approved equal.

212-2.2.7 Valve Boxes. Replace the entire subsection with the following:

Valve boxes shall be made of durable green plastic with locking lids in accordance with SPPWC 506. Boxes shall be sized to give maintenance freedom and access. All valve box lid locks shall use a common key.

212-2.3 Backflow Preventer Assembly. Add the following:

The backflow preventer shall be FEBCO Model No. 825YA or approved equal conforming to the requirements of Los Angeles County Department of Health Services.

212-2.4 Sprinkler Equipment. Add to the following:

The full-circle, part-circle or rectangular spray nozzles shall be capable of meeting the requirements for the area or radius shown on the Plans. The pop-up sprinklers, Spray plastic nozzles, Stream Spray, Bubbler heads and Flood Bubbler Nozzles shall be Rainbird 1800 series or approved equal.

Add the following subsection:

212-2.5 Pressure Relief Valve. Pressure Relief Valve shall be Cash Acme Model No. F-72 or approved equal; and shall be set at 125 psi.

212-3 ELECTRICAL MATERIALS

212-3.2 Conduit and Conductors

212-3.2.2 Conductors. Add the following:

Neutral Wires: (White (#12 AWG)). Do not interconnect neutral wires between controllers.

Spare Wires: Two (2) red and one (1) white spare wires (#12 AWG) shall be run in each direction from furthest valve of furthest valve manifold on each mainline run to each controller.

Loop 36-inch excess wire into each single valve box and into one valve box in each group of valves.

Pilot wires: (14 AWG) or larger as recommended by controller manufacturer for the corresponding run distance. Contractor shall field verify run distances prior to installation.

Wireless Connections: Neutral, pilot, and spare wires shall be installed with two-foot (2') excess coiled wire length at each end enclosure, valve box or pull box. For low voltage installations, a continuous wire shall be used between the controller and remote control valves. Each and every wire splice shall be soldered (using 60-40 solder) together, then encased in the waterproofed epoxy of the "Scotch-Pac" or "Pen-Tite" connectors. Wire splices shall be made only in valve or pull boxes. Under no circumstances shall splices exist without prior approval from the Engineer.

Add the following subsections:

212-3.4 Controller Enclosure. The enclosure shall be per the irrigation legend on the irrigation drawings.

212-3.5 Hydraulic Tubing. Hydraulic tubing shall be ¼ inch polyethylene tubing, Toro Model 900-14 or approved equal. Splicing shall be with waterproof plastic coupling devices, Toro Model 900 or approved equal. The Contractor shall remove all damaged tubing and all tubing that has interior deposits resulting from Contractor's construction activities.

SECTION 213 – ENGINEERING FABRICS

213-2 GEOSYNTHETICS

213-2.1 General. Replace the first paragraph with the following:

Geotextile fabric shall be non-woven conforming to the requirements of AASHTO Designation M288-99.

Delete the last two paragraphs.

213-2.2 Physical Properties. Replace the entire subsection with the following:

Where specified in the plans for the purpose of separation between underlying subgrade and aggregate or miscellaneous base, Non-woven geotextiles shall meet the requirements of Type 250N indicated in Table 213-2.2(A).

Where specified in the plans, specifications or Appendices, for the purpose of separation between an underlying AC pavement leveling course and an AC pavement surface course, the Propex Petromat Non-woven paving fabric - Style 4598 shall be installed per the manufacturer's specifications.

213-2.3 Identification. Delete the last sentence.

213-3 MOISTURE BARRIER

Unless otherwise specified on Plans, the moisture barrier shall conform to the following specifications:

Color	Black
Thickness	0.030 Mil.
Depth	30 inches
Tensile Strength	3,850 psi
Flexural Stiffness	120,000 psi
Vicat Softening Point	127 C
Low Temperature Brittleness	-76

The moisture barrier shall be by Century Products (714) 532-7084 or approved equal.

SECTION 214 – TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS

Delete the entire Section 214 and replace with Section 85 of the Caltrans Standard Specifications (latest edition).

85-1.05 Retroreflective Pavement Markers

85-1.055 Adhesives. Add the following:

At the option of the Contractor, a hot melt bituminous adhesive may be used to cement the markers to the pavement, instead of the Rapid Set Type or Standard Set Type adhesive specified in Section 85-1.06 of the Caltrans Standard Specifications. The bituminous adhesive material, if used, shall conform to the following:

<u>ASTM Test Specification</u>	<u>Method</u>	<u>Requirement</u>
Flash Point, COC °F	D 92	550 Min.
Softening Point, °F	D 36	200 Min.
Brookfield Viscosity, 400° F	D 2196	3,000-7,500 cP
Penetration, 100g 5 sec., 77° F	D 5	10-20 dmm
Filler Content, % by weight (Insoluble in 1,1,1 Trichloroethane)	D 2371	50-75

A blue RPM shall be placed at all fire hydrant locations per City requirements.

Add the following Section 215:

SECTION 215 - SIGNAGE

215-1 ROADSIDE SIGNS.

Signs shall conform to the provisions in Section 56, "Signs," of the State Standard Specifications, the State Specifications for Reflective Sheeting on Aluminum Signs, the State Specifications for Aluminum Single-Sheet and Laminated-Panel Signs and these Special Provisions and as directed by the Engineer.

Amended as follows:

56-2.02 Materials. Revise the entire subsection with the following:

The various materials and fabrication thereof of roadside signs shall conform to the requirements of 56-2.02 A and 56-2.02 D, and shall comply with the requirements of the CA MUTCD.

56-2.02A Metal Posts. Delete the first paragraph.

Add the following Section 217:

SECTION 217 - PRECAST CONCRETE MANHOLES

217-1 PRECAST CONCRETE MANHOLES.

Precast concrete manholes shall be Jensen Model No. 466 as manufactured by Jensen Precast Company, Fontana, California or approved equal.

PART 3 - CONSTRUCTION METHODS

SECTION 300 – EARTHWORK

300-1 CLEARING AND GRUBBING

300-1.3 Removal and Disposal of Materials

300-1.3.1 General. Replace the entire subsection with the following:

Unless otherwise stated on the Plans or Specifications, all material removed from the Work shall become the property of the Contractor and shall be disposed of in a lawful manner. Removals shall include, but not limited to, all excess excavation material, trees and plants, debris, interfering portions of curb, gutters, asphalt and PCC concrete pavements and sidewalks (including base, where applicable), and miscellaneous items as shown on the Plans. The Contractor shall conform to the following requirements:

- 1) The Contractor shall not start any removal work unless it is prepared to perform reconstruction work within 24 hours of the time removals were begun, unless otherwise approved by the Engineer.
- 2) The Contractor shall complete forming and pouring of PCC construction within five (5) working days following the removal of existing material at any location.

- 3) The Contractor shall not remove on-site improvements until it is prepared to construct the adjacent street section and shall promptly restore all such improvements as applicable, upon completion of the adjacent street work.

All concrete removed shall be hauled off the Work site no later than the calendar day following the day that the removal is performed.

The limits for sidewalk, curb and gutter and driveway shown on the plans are approximate. The actual removal and/or construction limits shall be as marked and/or directed by the Engineer in the field.

In order to protect the public streets from deterioration due to hauling of materials, the Contractor shall submit, prior to the Pre-Construction Meeting, for approval a proposed route for hauling of materials for disposal. Upon approval, the Contractor shall strictly adhere to that route, unless written permission from the Engineer is obtained to change the route.

300-1.3.2 Requirements

- a) **Bituminous Pavement.** Replace the first and second sentences with the following: Bituminous pavement shall be removed to neatly sawed edges.

Add subparagraphs (d) and (e):

- (d) **Trees.** The City maintains a tree conservation policy. Unless otherwise shown, all trees are to be protected in place. Demolition and destruction of trees and tree parts, including trunks, branches and foliage, shall be limited to tree removals as shown on the Plans. Root pruning and removals shall be limited to the minimum required to construct new improvements where trees are to be conserved.

Streetscape shall place a visible removable "tag" on each tree proposed to be removed at least five (5) work days and no earlier than ten (10) work days prior to removal. Said "tag" is intended to give adjacent residents proof of trees to be removed or saved. Tags shall be on the sidewalk side of trees and located at least five feet (5') above ground.

The Contractor shall remove only trees that have been marked by Streetscape for removal. Trees shall be removed in a workmanlike manner so as not to injure other standing trees, plants, and improvements which are to be preserved.

Stumps shall be ground down three feet (3') below ground surface within five (5) feet of the center of the stump. All surface roots shall be removed within the parkway.

The Contractor shall conform to the following requirements:

- 1) The cutting down or removal of trees is prohibited after the prescribed working hours unless permission is granted by the Engineer.
- 2) All debris from pruning or removing a tree shall be cleaned up and hauled away from the Work site on the same day that the tree is cut or pruned. Firewood-size logs may be left neatly piled for residents to pick up for no longer than three (3) days.
- 3) All holes created from removal of tree stumps shall be backfilled and graded to finish level by the end of the workday.

- 4) Sprinkler systems disrupted by the Contractor shall be capped or restored by the end of the workday. Capped systems shall be restored to original working condition within three (3) days.

(e) **Miscellaneous Removals and Relocations.** This work shall include all removals not specifically listed in the Proposal or otherwise covered by these Specifications, and all necessary relocations and restorations of walls, fences, plants, hardscape, signs and other items, whether shown on the Plans or not, and as necessary to complete the improvements.

Add the following section:

300-1.3.3 Construction and Demolition Debris Recycling

General. Consistent with the Agency's efforts to comply with the California Integrated Waste Management Act of 1989 (AB 939), the Contractor shall reduce, reuse, and/or recycle to the maximum extent feasible, the construction and demolition debris (debris) generated by this Contract hereby diverting the debris from disposal facilities, saving landfill space, and conserving virgin materials and natural resources.

Definitions

Shall be as defined in the TORRANCE MUNICIPAL CODE, DIVISION 4, CHAPTER 3, ARTICLE 8 (or Section 43.8.1).

RECYCLING SUMMARY

The Contractor shall prepare and submit a Recycling Summary report using the form included as Appendix V summarizing the disposal, reuse, and/or recycling activities which occurred throughout the Contract duration. This report shall be submitted by the Contractor to the Agency, before or with its request for the final Progress Payment for said Contract.

Failure of the Contractor to submit the Recycling Summary within the time specified will result in damages being sustained by the Agency. Such damages are, and will continue to be, impracticable and extremely difficult to determine. For failure to submit the Recycling Summary, as required, the Contractor shall pay to the Agency, or have withheld from monies due it, the sum of \$10,000 for a contract of \$500,000 or more. The Contractor shall pay to the Agency, or have withheld from monies due it, 2% of the total contract amount for a contract of \$499,999 or less.

Execution of the Contract shall constitute agreement by the Agency and Contractor that \$10,000 (2% for contracts \$499,999 or less) is the minimum value of the costs and actual damage caused by the failure of the Contractor to submit the Recycling Summary within the time specified. Such sum is liquidated damages and shall not be construed as a penalty, and may be deducted from payments due the Contractor.

PAYMENT

The cost of construction and demolition debris recycling and completing the Recycling Summary report shall be considered as included in the Contract Unit Price for the various Bid

items. The quantities reported will be used for information gathering purposes and not for purposes of payment to the Contractor.

300-1.4 Payment. Replace the entire subsection with the following:

When the Contract does not include a pay item for clearing and grubbing, payment under this section shall be by the following:

- a) **Bituminous Pavement.** Payment for the removal and disposal of bituminous pavement for construction of local depression, alley intersection and cross gutters/spandrels shall be considered as included in the Contract Unit Price for the appurtenant items of work, and shall include sawcutting, removal of underlying subgrade and base, disposal, subgrade preparation and compaction, labor and equipment.
- b) **Concrete Pavement, Cross-Gutters and Alley Intersections.** Payment for removal and disposal of concrete pavement, cross-gutters, alley intersection and local depression shall be included in the Contract Unit Price for the appurtenant items of work and shall include sawcutting, complete removal of underlying subgrade and base, disposal, and all labor and equipment necessary to complete the required removal.
- c) **Concrete Curb, Walk, Gutters and Driveways.** Payment for removal and disposal of concrete curb, curb and gutter, walk, and driveways shall be included in the Contract Unit Price for the appurtenant items of work. Removals shall include sawcutting, root pruning, complete removal of underlying subgrade and base, subgrade preparation and compaction, disposal, and all labor and equipment necessary to complete the required removal.
- d) **Trees.** Payment for tree removals shall be included in the Contract Unit Price for "Remove Existing Tree and Roots" and "Remove Australian Christmas Trees on Calle Miramar" for both 18" and 27" diameter each (EA) and shall include all work involved in tagging, cutting and complete removal of trunks, branches, stumps and roots; hauling, disposal, restoration and replanting of removal areas; and incidentals. Notes for removals are considered to be typical. In the event that there is not a specific note indicated for a tree or other removal that is in conflict with the new improvements, it shall be considered to be removed and the payment for such removals shall be considered to be within the unit price bid for the various removals and no additional payment will be made therefor. There shall be no separate payment for tree conservation efforts, and all costs thereof shall be absorbed in the bid prices.
- e) **Miscellaneous Removal and Relocations.** Payment for miscellaneous removals and relocations shall be per the Contract Unit Price for the appurtenant items of work, and shall include full compensation for excavation, backfilling, grading, trimming plants, pruning tree limbs, import of native and select backfill material if required, placing of top soil, disposing of surplus material, removing existing asphalt walkway, and appurtenant work.
- f) **Painted Curb.** There is no separate payment for removal of paint on concrete curb. Full compensation for furnishing all labor materials, tools, equipment and incidentals as shown on the plans and specified in these Special Provisions shall

be included in the Contract Unit Price for "Signing, Striping and Pavement Markings."

300-2 UNCLASSIFIED EXCAVATION

300-2.2 Unsuitable Material

300-2.2.1 General. Replace the first paragraph with the following:

Unclassified excavation shall consist of all excavation, including roadway, bituminous pavement, base material, and native material.

Removal of Bituminous Pavement

Bituminous pavement shall be removed to neatly sawed edges. Where bituminous pavement adjoins a trench, the edges adjacent to the trench shall be saw cut to neat straight lines before permanent to ensure that all areas to be paved are accessible to the rollers used to compact the sub grade or paving materials. Removal at flow line areas shall include restoring pavement surface to flow line grade based on surrounding conditions.

The Contractor shall utilize appropriate equipment to excavate to grade (i.e. milling machine).

Existing utilities are not marked out. The Contractor shall be responsible for USA DigAlert notification, locating and determining the depths of all utilities and to provide adequate clearance. No additional compensation shall be allowed for utility research.

Removal of Concrete Curb, Gutter, Sidewalks, Cross Gutters, Driveways and Access Ramps

Concrete shall be removed to neatly sawed edges. Concrete sidewalk, access ramps or driveways to be removed shall be neatly sawed in straight lines either parallel to the curb or at right angles to the alignment of the sidewalk. No section to be replaced shall be smaller than 30 inches in either length or width. If the saw cut would fall within 30 inches of a construction joint, functional weakened plane joint, expansion joint or edge, the concrete shall be removed to the joint or edge. In any case, the saw cut shall be made in and along a score mark if within the 30-inch zone. Curb and gutter shall be sawed to a depth of 1.5 inches on a neat line at right angles to the curb face.

Removal of all PCC items shall be paid under their respective bid items, and no additional payment shall be made therefor.

Removal of all AC items shall be paid under their respective bid items, and no additional payment shall be made therefor.

Removal of all other work shall be included as an incidental cost to their respective bid items, and no additional payment shall be made therefor.

All roots found within excavation area shall be removed per subsection 300-6.2 of the Standard Specifications. The Contractor shall coordinate all root removals with the City Arborist.

If unsuitable material is found, the Contractor shall remove said material to the limits to be determined by the Engineer and shall replace said material with select fill or base material, as to be determined by the Engineer. Payment for removal and replacement shall be paid for per the Contract Unit Price for various bid items.

Alternatively, as determined and directed by the Engineer, the Contractor shall install geotextile fabric (Per Section 213 ENGINEERING FABRICS of these Special Provisions) on the subgrade to the limits determined by the Engineer in lieu of unsuitable material excavation and CMB backfill.

Payment for unsuitable material excavation and backfill shall be measured and paid for per the Contract Unit Price for various bid items.

Payment for geotextile shall be paid for per the Contract Unit Price for various bid items.

300-2.9 Payment. Replace the first paragraph with the following:

Full compensation for complying with the work contained in this section shall be included in the various unit bid prices, and no additional payment shall be made therefor. Payment for the removal and disposal of bituminous pavement for street reconstruction areas shall be considered as included in the Contract Unit Price for various bid items and shall include sawcutting, removal of underlying subgrade and base, disposal, subgrade preparation and compaction, labor and equipment.

SECTION 301 – TREATED SOIL, SUBGRADE PREPARATION, AND PLACEMENT OF BASE MATERIALS

301-2 UNTREATED BASE

301-2.1 General. Add the following:

Base is required under all PCC and AC improvements as shown on the Plans. Additional base may be required after review of work areas following removals. Prior to constructing new improvements, the Contractor shall verify with the Engineer that the base sections as shown on the Plans (including areas where no base is called for) are adequate. Payment for any changes shall be made pursuant to Section 3.

A minimum of 8-inches CMB shall be placed under curb, curb and gutter, cross gutters, spandrels and concrete bus pads. A minimum of 6-inches CMB shall be placed under driveways (includes portion to right-of way/property line), alley intersections, local depressions, stained median concrete (maintenance vehicle pullouts) and AC or PCC pavement on private property as part of driveway reconstruction. A minimum of 4-inches CMB shall be placed under sidewalks, access ramps and stained median concrete (noses and mow strip).

Crushed Miscellaneous Base (CMB) shall conform to the requirements as per these Specifications and SSPWC.

301-2.4 Measurement and Payment. Add the following:

Crushed miscellaneous base shall be included as incidental in all work items requiring such, and no additional compensation will be allowed.

SECTION 302 – ROADWAY SURFACING

302-1 COLD MILLING EXISTING PAVEMENT

302-1.1 General. Add the following after the first paragraph:

Cold Milling shall include edge milling, header milling and profile milling as necessary to provide the required grades and allow for a smooth pavement profile in preparation for asphalt concrete overlay paving. Milling limits shown on the plans are approximate. The Engineer may direct the Contractor to cold mill in other areas, or deeper, as necessary for construction. Some adjustment of limits and depths will be necessary to accommodate paving requirements. Cold milling shall be to the depth as specified or directed, or to the underlying base material, pavement fabric, or macadam material. Milling depth shall be adjusted so as not to remove any macadam encountered. Care shall be exercised not to damage adjacent concrete including curbs without gutters. Gutters or curbs damaged shall be replaced at the Contractor's expense. There are areas within the project that require cold planing which are inaccessible to the type of milling machine as described herein above. Some of these areas include local depressions, curb return, curbs without gutters, utility manholes and vaults. The Contractor shall be required to use a smaller hand machine or other device to cold plane the required horizontal limits and depth at those locations.

The Contractor shall remove existing asphalt concrete overlay from gutters adjacent to any area specified to be cold milled, as directed by the Engineer.

Add the following after the third paragraph:

The Contractor shall apply any leveling course at least one day prior to placing either an AC or ARHM overlay. Payment for "AC Pavement Level Course" shall be per the contract unit price per ton (TN), complete in place.

302-1.4.2 Equipment.

Add the following:

The machine used for milling shall meet the following requirements:

The milling machine shall be specially designed and built for milling of bituminous pavement without the addition of heat, with the ability to plane portland cement concrete patches in the bituminous pavement. The cutting drum shall be a minimum of 60 inches wide and shall be equipped with carbide-tipped teeth placed in a variable lacing pattern to produce the desired finish.

The machine shall be capable of being operated at speeds from 0 to 40 feet per minute. It shall be self-propelled and have the capability of spraying water at the cutting drum to minimize dust. The machine shall be capable of removing the material next to the gutter of the pavement being reconditioned and be designed so that the operator can at all times observe the milling operation without leaving the controls. The machine shall be adjustable for slope and depth and shall deep cut in one pass a maximum of 3 inches without producing fumes or smoke.

The Contractor shall provide a smaller machine if required to trim areas inaccessible to the larger machine at manholes, gate valve covers, curb returns, and intersections. The smaller machine shall be equipped with 12 inch minimum-width cutting drum mounted on a chassis allowing it to be positioned without interrupting traffic or pedestrian flow.

302-1.7 Work Site Maintenance

Add the following:

During the milling operation, the Contractor shall sweep the entire street with mechanical equipment and remove all loosened material from Work site until completion of the removal work. The Contractor shall take all necessary measures to avoid dispersion of dust.

302-1.9 Traffic Signal Loop Detectors.

Add the following:

Before cold milling pavement that contains existing traffic signal detector loops, the Contractor MUST notify the Engineer at least 3 working days prior to commencing said work.

302-1.10 Pavement Transitions.

Delete the entire subsection and replace with the following:

Structures and vertical joints within the cold-milled areas that are transverse to through traffic and greater than 1 inch in height shall be ramped with temporary asphalt concrete pavement. Ramps shall be constructed the same day as the existing pavement is cold milled, and removed the same day and just prior to placement of permanent paving. Ramp dimensions and compaction shall be approved by the Engineer.

302-1.11 Measurement. Replace the first paragraph with the following:

Full compensation for AC Cold Milling shall be paid per the square foot (SF) of surface milled, and shall include full compensation for all labor, equipment, and materials required to complete the work. No additional payment shall be made therefor.

302-1.12 Payment. Replace the first paragraph with the following:

Payment for complying with the work contained in this section shall be included in the contract bid price for "AC Cold Milling, Variable Depth" per Square Foot (SF). Payment shall include all labor, tools, equipment, materials and incidentals necessary to complete the work and no additional compensation will be allowed therefore.

Add the following subsection:

302-1.13 AC Cold Milling, Variable Depth

The contract bid item for AC Cold Milling shall include all labor, work and materials necessary for edge, transition (header), and surface cold milling of existing asphalt concrete pavement surfaces, complete in place. The work shall include cold milling, removals, cleaning and sweeping, protection, traffic control and all other work necessary to cold mill the AC pavement complete in place.

Edge cold milling shall remove a tapered section of AC pavement, varying from the depth specified at the edge of curb or gutter, to 0" at 12' from the edge of curb or gutter. Milling shall provide an evenly roughened and planar surface in preparation for overlay of asphalt concrete pavement.

Transition (header) cold milling shall remove a tapered section of AC pavement running transverse to the street at joins to existing pavement and at cross gutters, varying from the depth specified at the join or edge of gutter, to 0" at 20' minimum from the join or edge of gutter. Milling shall provide an evenly roughened and planar surface in preparation for overlay of asphalt concrete pavement.

Cold Milling for spot pavement repair shall remove a minimum 8' wide section of asphalt where spot repair is required on plans. Depth will vary according to condition of the pavement and according to 302-5.11. Milling shall provide an evenly roughened and planar surface no more than 1 day after milling in preparation for inspection by Engineer to determine depth of final pavement section.

Intersections shall be cold milled to the various depths as required by the intersection grading plans prior to paving.

All debris from grinding shall be hauled away, and costs for hauling and disposal shall be included in this bid item.

Contractor shall include washing and vacuuming of all AC milled surfaces as a part of the work. Operations shall be completed integrally and without delay during all cold milling operations. If necessary, pressure washing shall be performed to remove all debris and residual material prior to the application of sealants or tack material. No sealants or tack material shall be applied prior to the inspection and approval of surface cleanliness by the Engineer. Contractor shall contain, remove, and dispose of all washed away materials in accordance with best management practices.

Payment for this section shall be per subsections 302-1.11 and 302-1.12 of these Specifications.

302-5 ASPHALT CONCRETE PAVEMENT

302-5.4 Tack Coat. Replace the first sentence of the first paragraph with the following:

If the asphalt concrete pavement is being constructed directly upon an existing hard-surfaced pavement, a tack coat of viscosity grade AR 4000 or AR 8000, or performance grade PG 64-10 paving asphalt conforming to 203-1 applied at an approximate rate of 0.25 L/m² (0.05 gallon per square yard), or SS-1h emulsified asphalt applied at an approximate rate of 0.25 L/m² to 0.45 L/m² (0.05 to 0/10 gallon per square yard), shall be uniformly applied upon the existing pavement preceding the placement of the asphalt concrete.

Add the following paragraph:

A Tack Coat shall be applied between base and finish courses when the finish course is not placed immediately after the base course, and to existing paved surfaces where new asphalt concrete overlaps or abuts existing pavement. Tack Coat shall be as specified in Section 302-5.4. There shall be no separate payment for Tack Coat.

302-5.5 Distribution and Spreading

Delete the fourth paragraph and substitute the following:

Asphalt concrete shall not be placed until the atmospheric temperature is a minimum of 10°C (50°F) and rising, and the surface temperature of the underlying material is a minimum of 4°C (40°F). Asphalt concrete shall also not be placed during unsuitable weather.

Fully automatic screeds will be required on this Project. A fully automatic screed shall have a sled, 9.1m (30 feet) in length, on the side of the machine which will receive the next mat of material. A joint maker, ski, etc., placed on the side of the machine to ride on the existing or previously constructed surface or mat of asphalt concrete material may be required as directed by the Engineer.

Delete Table 302-5.5(A) and substitute the following:

TABLE 302-5.5(A)

Specified Total Thickness of Pavement		Required Number of Courses	Class Of Mixture
Greater Than mm(Inches)	But Not More Than mm(Inches)		
0	25mm (1)	1	D2-PG 64-10
25mm (1)	38mm (1-1/2)	1	D2-PG 64-10
38mm (1-1/2)	75mm (3)	1	C2-PG 64-10
75mm (3)	100mm (4)	2	Base Course - B-PG 64-10 Finish Course - C2-PG 64-10 or as directed
100mm (4)	-	2 or more	Base Course - B-PG 64-10 Other Courses - C2 -PG 64-10 or as directed

Specifications Section 203-6.1 shall take precedence over these requirements.

302-5.8 Manholes (and other structures). Add the following:

Contractor shall be required to remove manholes and utility access covers to below the depth to be removed and restore said covers to finish grade upon completion of paving.

Add the following subsections:

302-5.8.1 Adjust Manhole Frame and Cover to Grade

The Contractor shall adjust manhole frames and covers to grade (except for utility covers, boxes, lids, and other utility structures which are adjusted by others or are covered under item "Adjust Manhole Frame and Cover to Grade"). The work shall include protection, removal, lowering during demolition and preparation, minor trimming or mortar fill, setting the frame and cover to grade, and forming pavement or other constructed work around the structure. The work may include replacement with a new structure or cover to be provided by others. The finished adjustment shall be flush to adjacent surfaces and of sufficient strength to support anticipated traffic. All utility adjustment work and safety requirements shall be coordinated with the appropriate utility agency. If a lid or cover is to be replaced, the Contractor shall coordinate said replacement with the appropriate utility agency.

The Contractor shall remove all construction debris from within manholes.

Payment for adjustment of existing manhole frames and covers to grade shall be paid per each (EA) under "Adjust Manhole Frame and Cover to Grade". Payment shall include all labor, equipment, materials and incidentals necessary to complete the work complete in place, and no additional compensation shall be allowed therefore. Payment for adjustment of new manhole frames and covers to grade shall be included separately in the manhole bid item.

302-5.8.2 Adjust Utility Access Cover to Grade

The Contractor shall adjust utility covers, boxes, lids, and other utility structures to grade (except for manholes and vault covers which are adjusted by others or are covered separately under item "Adjust Manhole Frame and Cover to Grade"). The work shall include protection, removal or lowering of the utility cover during demolition and preparation, setting the structure to grade, and forming pavement or other constructed work around the structure. The work may include replacement with a new structure or cover to be provided by others. The finished adjustment shall be flush to adjacent surfaces and of sufficient strength to support anticipated traffic. All utility adjustment work and safety requirements shall be coordinated with the appropriate utility agency. If a lid or cover is to be replaced, the Contractor shall coordinate said replacement with the appropriate utility agency.

The Contractor shall remove all construction debris from within valve sleeves.

Full compensation for complying with the work contained in this section shall be included in the contract price bid per each (EA) for "Adjust Utility Access Cover to Grade", and shall include all labor, equipment, tools materials and incidentals necessary to complete the work. No additional compensation will be allowed.

302-5.9 Measurement and Payment (Asphalt Concrete Pavement).

Delete section in its entirety and replace with the following:

Payment for Asphalt concrete pavement shall be per the Contract Unit Price per ton, including subgrade and base preparation, base course, leveling course, tack coat, and all work necessary to install complete in place. There shall be no separate payment for tack coat, header paving or temporary pavement, and all costs for any said item shall be included in the bid price for the work to which it is appurtenant.

Add the following subsections:

302-5.10 AC Driveway Transition

The Contractor shall remove existing improvements and construct a 6" thick AC driveway transition over existing base as shown per Plan.

Materials – Asphalt Concrete shall be Type D PG 64-10 conforming to the provisions of subsection 203-10 of the Standard Specifications. The viscosity grade of paving asphalt shall be PG 64-10 per Section 92 – "Asphalt" of the State Standard Specifications or as determined by the Engineer.

The provisions in Section 400-4.2.2 "Aggregate" of the Standard Specifications shall have the following additional requirement:

At least 75 percent, by weight, of the material retained on the No. 4 sieve shall have at least one fractured face as determined by California Test Method No. 205.

Paint binder (tack coat) shall be SS-1h Type asphaltic emulsion conforming to Section 203.3 of the Standard Specifications.

Construction - Construction shall conform to the applicable provisions of Sections 302 and 400 of the Standard Specifications. Driveway transitions shall be constructed in at least two lifts, with the final lift being 2" thick.

Tarpaulins shall be used to cover all loads from plant to project. Any material that arrives onsite with temperature outside the allowable range per the SSPWC will be rejected.

Paint binder (tack coat) shall be applied to all vertical surfaces to be joined or as directed by the Engineer. Paint binder (tack coat) shall be applied at the rate of 0.10 gallons per square yard conforming to the provisions of Section 302-5.4 of the Standard Specifications.

Distribution, spreading and compacting shall conform to the provisions of Section 302-5 of the Standard Specifications and these Special Provisions.

Rolling equipment shall consist of one 12-ton, 2 axle tandem roller for each 50 tons, or fraction thereof, of asphalt concrete placed per hour by each asphalt paver. The use of three-wheel rollers and pneumatic rollers shall not be permitted.

The Contractor shall place Full Depth AC Pavement as required by these specifications and drawings, and where directed by the Engineer. Asphalt pavement shall be 6" full depth pavement over existing soil compacted to 95% minimum.

AC Transition shall be in accordance with the Plan and shall involve constructing AC Pavement at transition to join proposed back of walk. Work shall include re-grading existing surface to join proposed back of walk and replacing existing surface with 6" full depth AC pavement. Surface designation noted on plan applied from back of sidewalk to limit of construction and for the entire width of that property unless otherwise noted on the Plan.

Transitions shall provide for smooth joins and transitions from new construction to existing improvements, without any vertical disruptions or abrupt angular changes.

Payment for complying with the work contained in this section shall be included in the Contract Unit Price for "Remove Existing and Construct 6" Full Depth AC Driveway Transition" per square foot (SF), which shall include full compensation for furnishing all labor, materials, paint binder (tack coat), tools, equipment and incidentals and for doing all of the work involved in constructing asphalt concrete pavement complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed. Weight certification tickets are required for payment. No additional compensation will be allowed therefore.

302-5.11 AC Slot Patch and Pavement Repair

The Contractor shall remove existing improvements, including subgrade and base and construct asphalt concrete pavement slot patch or pavement repair as shown per plan, in these specifications, or as directed by the Engineer.

Materials –Asphalt Concrete for slot patch and pavement repairs shall be Type B PG 64-10 conforming to the provisions of subsection 203-10 of the Standard Specifications, installed prior to level course and final overlay. For paved areas that will not be overlaid, the top 2" of pavement shall be type D2-PG-64-10. Placement and elevation of slot patch shall account for subsequent level course and overlay placement thicknesses. Placement of AC pavement repairs shall match existing adjacent paved surface elevations. The viscosity grade of paving asphalt shall be PG 64-10 per Section 92 – "Asphalt" of the State Standard Specifications or as determined by the Engineer.

The provisions in Section 400-4.2.2 "Aggregate" of the Standard Specifications shall have the following additional requirement:

At least 75 percent, by weight, of the material retained on the No. 4 sieve shall have at least one fractured face as determined by California Test Method No. 205.

Paint binder (tack coat) shall be SS-1h Type asphaltic emulsion conforming to Section 203.3 of the Standard Specifications.

Tarpaulins shall be used to cover all loads from plant to project. Any material that arrives onsite with temperature outside the allowable range per the SSPWC will be rejected.

The Contractor shall place Full Depth AC Pavement as required by these specifications and plans, and where directed by the Engineer. Exact locations and dimensions shall be as determined in the field. Asphalt pavement shall be 3" full depth AC pavement or 6" full depth AC pavement repair in 4" and 2" lifts where needed, over existing soil or subgrade compacted to 95% minimum.

Payment for AC pavement repair shall be included in the contract bid price for **"COLD MILL/REMOVE EXISTING AND CONSTRUCT 3" FULL DEPTH AC PAVEMENT REPAIR** per Square foot (SF), which shall include full compensation for removals, furnishing all labor, materials, paint binder (tack coat), tools, equipment and incidentals and for doing all of the work involved in constructing asphalt concrete pavement complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed. Should the engineer determine that the pavement at 3" is not sufficient for the repair section, the contractor will remove an additional 3" for a total of 6" full depth AC pavement repair which shall be included in the provisional contract bid price for **"PROVISIONAL BID ITEM: COLD MILL/REMOVE EXISTING AND CONSTRUCT ADDITIONAL 3" (TOTAL 6") FULL DEPTH PAVEMENT REPAIR IN 4" AND 2" LIFTS WHERE NEEDED."** Weight certification tickets are required for payment. No additional compensation will be allowed therefore.

1' wide AC Slot patch shall be saw cut, and backfilled with 2" AC over a 4" thick section of 1 sack sand-cement slurry, over 8-inch thick section of untreated Base.

Payment for 1' wide AC Slot Patch shall be included in the various bid items for which this item is appurtenant, and no additional compensation shall be allowed therefore.

302-5.12 AC Pavement Level Course

Leveling Course shall be Type D2 PG 64-10, applied over Tack Coat. The level course shall be of appropriate depth to adequately smooth irregularities and fluctuations in the existing asphalt pavement surface in preparation for an asphalt overlay. The actual thickness will vary per conditions in the field and as noted in the intersection grading plans, but shall be a nominal 1" thickness in average. The edges shall be tapered to ¼" or less as shown per Typical Sections, and taper to a 1" nominal thickness. The finished level course surface shall be smooth and fully prepare the pavement surface for overlay construction, and shall not vary more than ½" in 10'.

When overlay is constructed over existing pavement, the existing pavement surface shall be swept or washed clean, to the satisfaction of the Engineer and paint binder (tack coat) shall be applied at the rate of 0.10 gallons per square yard conforming to the provisions of Section 302-5.4 of the Standard Specifications.

Distribution, spreading and compacting shall conform to the provisions of Section 302-5 of the Standard Specifications and these Special Provisions.

The use of motor grader for spreading asphalt concrete overlay will not be permitted.

Rolling equipment shall consist of one 12-ton, 2 axle tandem roller for each 50 tons, or fraction thereof, of asphalt concrete placed per hour by each asphalt paver. The use of three-wheel rollers and pneumatic rollers shall not be permitted.

Full compensation for complying with the work contained in this section shall be included in the contract bid price for "AC Pavement Level Course" per ton (TON). Payment shall include all labor, equipment, materials and incidentals necessary to complete the work, and no additional compensation will be allowed therefore.

302-5.13 AC Walkway

The Contractor shall construct 2" thick asphalt concrete walkway over 4" CMB as designated on the plans. Work shall include site removals and grading, base, compaction, header boards where shown, placement, and asphalt compaction. Asphalt shall be type D2 PG 64-10, with a maximum 2% cross slope, 5% longitudinal grade, and compacted to 95% minimum. Adjacent landscape and irrigation systems shall be restored and/or reconstructed to match new walkway improvements.

Payment for imported fill material necessary to match grade shall be included in the contract bid price for "**FILL TO GRADE WITH SELECT BACKFILL MATERIAL**" per cubic yard and no additional compensation shall be allowed.

Work shall include installation of redwood header boards, staked in place, where shown.

Payment for complying with the work contained in this section shall be included in the contract bid price for "Remove Existing and Construct 4" AC Walkway over 4" CMB" per square foot (SF), which shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

302-5.14 Crack Routing and Sealing; Preparation for Paving

This work shall consist of preparation of existing pavement surfaces for overlay construction, crack sealing and placing of hot asphalt-rubber sealant material in cracks prior to the beginning of construction, milling and grinding, and removal of thermoplastic, excess paint, and raised pavement markers.

Existing thermoplastic striping, markings, and raised pavement markers shall be completely removed from all asphalt surfaces prior to overlay. Void areas shall be filled with fine mix asphalt as necessary to provide a smooth surface for overlay. Displaced pavement areas, especially at asphalt-concrete joint locations, shall be ground flush.

Existing aged and cracked sealant shall be removed and replaced. Crack sealant shall be placed on all surfaces to be overlaid. New crack sealant shall not extend more than 1/16" above existing pavement surfaces.

Materials - Asphalt-vulcanized rubber crack sealant material shall be Poly Flex Type 3 Crafcoc sealant or approved equal and shall conform to the following requirements:

1. Poly Flex sealant when heated in accordance with ASTM D3407 shall have the following characteristics:

Test	Limits
Cone Penetration (ASTM D3407)	15 – 45
Resilience (ASTM D3407)	30% Min.
Softening Point (ASTM D36).....	200° F Min.
Ductility, 77° F (ASTM D113).....	30 cm Min.
Flexibility (Crafco Procedure).....	Pass as 30° F
Asphalt Compatibility (ASTM D3407)	Pass
Bitumen Content (ASTM D4)	60% Min.
Tensile Adhesion (ASTM D3583)	500% Min.
Safe Heating Temperature.....	400° F
Recommended Pour Temperatures.....	380° F
Brookfield Viscosity 375° F (ASTM D3236)	4000 – 15000 cp
Unit Weight at 60° F.....	10.0 lbs./gal.

2. The sealant material shall have no water or volatile solvents and shall cure immediately upon cooling to a sufficient viscosity to prevent tracking by traffic.
3. The material will be packaged in approximately 60 lb. boxes with a polyethylene liner. The boxes shall be placed on pallets weighing approximately 2200 lbs. and shall be covered with a weather resistant covering.
4. The asphalt-rubber crack sealant material shall be accompanied by a certificate of compliance with these specifications from the manufacturer.

The Contractor shall submit the manufacturer's material certification for the asphalt sealant to the City Engineer for review and approval at least fourteen (14) calendar days prior to commencing any work.

Equipment - The equipment to mix and apply rubberized asphalt crack sealer shall be Crafco Model BC-220 or approved equal.

The joint and crack routing and cleaning machine shall be Crafco Model 200 or approved equal.

The joint cleaner attachment shall be Crafco Model 110 or approved equal of current manufacture.

Preparation of Cracks - All cracks which are 1/8" or greater in width shall be sealed. Cracks less than 1/2" in width shall be routed by mechanical means to widen the crack to a width of 3/4" and a depth of 3/4". Joints and cracks shall be swept and cleaned by air to remove dust, moisture and foreign material for a minimum of 6 inches on each side of the crack. All cracks and joints shall be treated with approved weed killer at least seven (7) days before sealant application.

Construction - Immediately after the preparation and drying of the crack, the asphalt rubber sealant material shall be applied. The material shall be melted in a jacketed double boiler type melting unit, which is equipped with both agitation and recirculation systems, and applied at temperature of 380° F, using a pressure feed wand application system.

Joints and cracks shall be sealed from the bottom up and sealant material shall be applied so it is flush with the existing pavement surface. Care shall be taken to avoid spillage and runover onto the surface of the pavement. The surface of pavement shall be immediately squeegeed smooth after the cracks have been filled.

Traffic shall not be allowed on the material until it has been sanded to prevent tracking.

In addition to these specifications, the crack preparation and application of crack sealant material shall be in accordance with the manufacturer's recommendations or as outlined in the booklet, "Sealing and Resealing Cracks the Crafcow Way," as published by Crafcow Inc., 6975 W. Crafcow Way, Chandler, Arizona 85226.

Sweeping and Clean-up - Contractor shall sweep clean all treated streets from all loose material and dust which are a result of the Contractor's operations (refer to section entitled "Dust Control and Clean-up" of these specifications). Sweeping shall be completed on the same day after the routing operation is completed, all to the satisfaction of the Engineer. Streets shall not be washed to the extent that debris may enter storm drain system. All streets, gutters and local depression areas of catch basins shall be kept free of dirt, rocks or other debris at all times. During routing and filling operations all catch basin inlets shall be covered with a fabric which will allow passage of water but will not allow debris to enter storm drain.

Payment for preparation for paving, detail grinding, crack routing and application of weed killer and asphalt-rubber sealant shall be at the contract price per lump sum (LS) for "Crack Routing and Sealing; Preparation for Paving", and shall be considered full compensation for crack preparation, removal and disposing of all excess material, sweeping and clean-up and for furnishing all labor, materials, equipment and incidentals to accomplish the work as specified herein and no additional compensation will be allowed.

302-9 ASPHALT RUBBER HOT MIX (ARHM).

Add the following:

The Contractor shall place asphalt concrete or asphalt rubber hot mix ARHM-GG (wet method) overlay as required by these specifications and drawings. Asphalt shall conform to Sections 203-11, 302-9, 400-4, and 600 of the Standard Specifications.

For AC overlay, the contractor shall prevent tracking onto adjacent pavement surfaces.

For ARHM, a rock dust blotter per Section 302-9.6 is required. ARHM shall conform to subsection 203-11 (Wet Process), class ARHM-GG-C.

The contractor shall pave the roadway within the limits indicated in these special provisions or staked in the field with in accordance with Section 302-9 of the standard specification. Roadways to receive full-width cold milling shall be resurfaced within the same work week.

The thickness of asphalt pavement shall be as specified on the plans and specifications. The Engineer will strictly enforce conformance to this thickness. Any deviation from this thickness resulting in additional tonnage shall be at the Contractor's expense unless otherwise approved by the Engineer.

ADD to Section 600-4.4, "Mix Designs and Certifications," the following:

The Contractor shall submit test reports and a Certificate of Compliance for the asphalt, additives and modifiers to be used.

The surface course shall be spread in one layer with the use of a self-propelled paving machine and shall be spread to the after compaction thickness as shown on the Plans.

When overlay is constructed over existing pavement, the existing pavement surface shall be swept or washed clean, to the satisfaction of the Engineer and paint binder (tack coat) shall be applied at the rate of 0.10 gallons per square yard conforming to the provisions of Section 302-5.4 of the Standard Specifications. Similarly, paint binder (tack coat) shall be applied to all vertical surfaces to be joined or as directed by the Engineer. A level course shall be placed prior to overlay where designated.

Distribution, spreading and compacting shall conform to the provisions of Section 302-5 of the Standard Specifications and these Special Provisions.

The use of motor grader for spreading asphalt concrete overlay will not be permitted.

Rolling equipment shall consist of one 12-ton, 2 axle tandem roller for each 50 tons, or fraction thereof, of asphalt concrete placed per hour by each asphalt paver. The use of three-wheel rollers and pneumatic rollers shall not be permitted.

Initial breakdown compaction shall consist of a minimum of three (3) coverages of a layer of asphalt mixture. A pass shall be a movement of a roller in both directions over the same path. A coverage shall consist of as many passes as are necessary to cover the entire width being paved. Overlap between passes during any coverage, made to insure compaction without displacement of material in accordance with good rolling practice, shall be considered to be part of the coverage being made and not part of a subsequent coverage. Each coverage shall be completed before subsequent coverages are started.

Tarpaulins shall be used to cover all loads from plant to project. Any material that arrives onsite with temperature outside the allowable range per the SSPWC will be rejected.

302-9.9 Payment. Replace the first sentence with the following:

Full compensation for complying with the work contained in this section shall be included in the contract bid price for AC PAVEMENT OVERLAY, TYPE C2 PG-64-10 or AC PAVEMENT OVERLAY, TYPE ARHM-GG-C (Wet Method) per ton (TON), which shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals required to remove existing raised pavement markers, prepare, tack coat, deliver asphalt material, place and compact asphalt concrete pavement for overlay, spread rock dust blotter and sweep residual rock dust, header paving, and all other work necessary to install complete in place and in accordance with the plans and these special provisions and as directed by the Engineer. Weight certification tickets are required for payment. No additional compensation will be allowed therefore.

Add the following section:

302-14 BITUMINOUS PAVEMENT CRACK SEALING

302-14.1 General. Bituminous Pavement Crack Sealing consists of furnishing all labor, equipment, and materials and performing all operations in connection with bituminous pavement crack sealing.

302-14.2 Cleaning. All pavement cracks greater than or equal to 1/4" width shall be cleaned by a hot air lance.

302-14.3 Materials. The crack sealing material shall be an asphalt cement, aromatic rubber extender, oil and a minimum of 20% powdered rubber by weight combined in such a manner as to produce a material with the following properties:

- 1) **WORKABILITY.** The material shall pour readily and penetrate large cracks at temperatures below 400° Fahrenheit.
- 2) **CURING.** The product shall contain no water or volatile solvents and shall cure immediately upon cooling to a sufficient viscosity to prevent tracking by traffic.
- 3) **LABORATORY EVALUATION.** When the sample of the product has been heated at 350° Fahrenheit for two hours, it shall pass the following tests:

Softening Point (R & B) 135°F Min. (ASTM D312)

Flexibility A 1/8" thick specimen of the product conditioned to 10°F shall be capable of being bent to a 90° angle over 1" mandrel without cracking.

The sealer shall be forced into the crack by use of a squeegee.

302-14.4 Measurement and Payment. There shall be no separate payment for Bituminous Pavement Crack Sealing. Full compensation for furnishing labor, materials and equipment and performing all operations in connection with pavement removals shall be included in the prices bid for appurtenant work.

SECTION 303 – CONCRETE AND MASONRY CONSTRUCTION

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS-GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS

303-5.1 Requirements

303-5.1.1 General. Replace the first sentence of the first paragraph with the following:

Concrete curbs, gutters, curb and gutters, sidewalks, walks, cross gutters, alley intersections, access ramps, driveways, stained median concrete paving and bus pads shall be constructed of Portland cement concrete of the class, compressive strength and other requirements prescribed in 201-1.

Replace the first sentence of the second paragraph with the following:

Unless otherwise specified on the Plans, and except as otherwise prescribed in 303-5.1.3 under the heading "Driveway Entrances," the minimum thickness of walks shall be 3-1/2 inches.

303-5.1.3 Driveway Entrances. Add the following:

The Contractor shall remove existing improvements and construct 6" PCC Driveway over 6" CMB as per Plans, and shall comply with Subsection 303-5 of the Standard Specifications. **Concrete shall be 520-C-2500.**

The Contractor shall sawcut and remove existing improvements including pavement, base, subgrade, and other in-place materials as necessary for construction, place base; and construct PCC driveway as shown per plan and detail drawings. New concrete improvements shall match existing finish and pattern as directed. Contractor shall coordinate with utility companies for utility adjustments needed when constructing the work.

All PCC work must drain to grade and must pass water test.

The Contractor shall install steel plates over driveways or otherwise maintain access where there is open excavation or curing concrete. Payment for provision, installation, maintenance, and removal of steel plates shall be included in the bid item for driveway replacement.

Except as specifically noted, no separate payment shall be made for crushed miscellaneous base (CMB). CMB shall be fine grade (3/4"). CMB shall be compacted to 95% relative compaction per Greenbook requirements. Unless noted otherwise, CMB will be considered as included in payment for the bid items, and no separate payment will be made therefore.

Payment for complying with the work contained in this section shall be included in the contract bid price for "Remove Existing and Construct 6" PCC Driveway over 6" CMB" per square foot (SF), which shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing PCC improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

The Contractor shall maintain driveway access at all times, except for short period during actual construction work. Closures shall be coordinated with the using resident or business, and shall be scheduled for their convenience as much as possible. Owners shall be notified of the planned work at two days in advance of construction. The Contractor shall provide for alternate access or parking, or provide plates spanning the work for access to the property. Any plates or other work affecting pedestrian crossing shall be properly signed and protected. PCC shall be protected until a minimum strength of 2,000 psi is attained. The Contractor may utilize high-strength early curing concrete upon approval of the Engineer to minimize plates/maintenance costs. Curb & gutter shall be placed separately from driveway and sidewalk pours.

Work Requested by a Property Owner. The Contractor is allowed to perform work which is not a part of this Contract and in the project area if the work is requested, and paid for, by a property owner provided that:

- a The Contractor shall inform the Engineer of the nature, quantity and location of the work requested by the property owner; and
- b The requested work does not impact the schedule or cost of the contract work; and
- c The Property owner and Contractor are required to obtain all permits for requested work; and
- d The Contractor is required to obtain all inspections and approvals.

303-5.5 Finishing

303-5.5.2 Curb Add the following:

Unless otherwise approved by the Engineer, the entire affected concrete curb, gutter, cross-gutter, or spandrel portion shall be removed by sawcutting the adjacent AC pavement one (1) foot from the edge of the affected area to be removed.

For concrete curb and gutter work located in a spandrel, sawcut spandrel to a distance of six inches (6") minimum from the flow line of the gutter to be removed. The Contractor shall reconstruct the spandrel to match the existing spandrel portion to remain and be on eight inches (8") of untreated Base. No extra payment will be allowed for the PCC spandrel construction.

For concrete curb and gutter reconstruction work adjacent to cold milling areas or areas where adjacent pavement will remain in place, sawcut adjacent AC pavement a distance of one foot (1') from edge of gutter to be removed unless otherwise specified in the plans. The Contractor shall reconstruct this section with a 4" thick section of 1-sack cement and sand slurry mix on eight inches (8") of Crushed Miscellaneous Base. The final surface elevation of the 1-sack cement and sand slurry mix shall be 1-3/4" below edge of gutter elevation to accommodate the 2" AC overlay and a 1/4" high "lip" along the edge of gutter.

For concrete curb and gutter reconstruction work adjacent to areas of pavement reconstruction, the Contractor has the following 2 options:

1. The entire portion may be removed without sawcutting and removing the adjacent AC pavement; however, any damaged pavement must be removed and temporary AC provided and maintained in its place until the adjacent pavement is removed as per the contract; or
2. Remove the entire affected concrete curb or curb and gutter portion by sawcutting the adjacent AC pavement a distance of six (6) inches from the face of curb or edge of gutter to be removed. The contractor shall reconstruct this six (6) inch wide section with a 2-inch thick section of temporary AC pavement on either Crushed Miscellaneous Base or imported fill with a sand equivalent of 30 or greater.

Payment for 1' slot patch adjacent to areas of pavement reconstruction will be included in the payment for various curb and gutter items.

Payment for AC reconstruction beyond 1' from edge of gutter shall be paid for out of the bid items for "Cold Mill/Remove existing and construct 3" full depth ac pavement repair" and "Provisional bid item: Cold Mill/Remove existing and construct additional 3" (total 6") full depth pavement repair in 4" and 2" lifts where needed."

303-5.5.5 Alley Intersections, Access Ramps, and Driveways. Add the following:

Unless otherwise approved by the Engineer, the entire affected curb and gutter portion shall be removed by sawcutting the adjacent AC pavement one (1) foot from the edge of the PCC gutter. Where applicable, the contractor shall reconstruct this one (1) foot wide section with a 2-inch thick section of AC pavement (C2-PG-64-10) on a 4-inch thick section of 1-sack cement and sand slurry mix on an 8-inch thick section of untreated Base. If the affected curb and gutter is located in a spandrel, the spandrel shall be sawcut six inches (6") minimum from the flow line of the gutter and the spandrel reconstructed to match the existing spandrel portion to remain and be on 8 inches of untreated Base. No extra payment will be allowed for the PCC spandrel construction.

PCC Access Ramps shall be constructed at locations shown on the Plans and per SPPWC.

Access ramps constructed in existing curb returns may obliterate survey tie points. The Contractor shall restore all survey monuments disturbed by the construction. Payment and specifications for survey monument restoration shall be in accordance with section 2-9.

Detectable Warning Surface. Unless otherwise specified on Plans or elsewhere in these Specifications:

Access ramps shall have a single piece prefabricated detectable warning surface with dimensions of 36-inches (behind curb) by 48-inches wide (along curb) installed in accordance with the State of California's 2010 Standard Plan A88A and comply with the requirements of the Americans with Disabilities Act (ADA). Detectable warnings shall consist of raised truncated domes with a base diameter of nominal 0.9 inches, a top diameter of nominal 0.45 inches, a height of nominal 0.20 inches and a center-to-center spacing ranging from a consistent 1.67 inches for all spacings to 2.35 in (60 mm) for all spacings.

The detectable warning surface shall be a 0.1975 inch (minimum) thick removable cast-in-place system. A sample of the system product that meets this specification is produced by ADA Solutions, Inc. at or Access Tile at www.accesstile.com. A contractor may propose an alternate, similar product for consideration by the Engineer. The color of the detectable warning surface shall be Dark Gray (Federal Color No. 36118) or as approved by the Engineer prior to installation. The detectable warning system is to be manufactured with materials that are fully recyclable. The detectable warning surface shall be installed in accordance with the manufacturer's recommendations and instructions. The manufacturer shall provide a minimum 5-year warranty, guaranteeing replacement when there is a defect in the dome shape, color fastness, sound-on-cane acoustic quality, resilience or attachment. The warranty period shall begin on the date of acceptance of the Contract.

Driveways as shown per Plans and shall have a minimum concrete thickness of 4 inches for single family residences and 6 inches for all other areas.

Work Requested by a Property Owner. The Contractor is allowed to perform work which is not a part of this Contract and in the project area if the work is requested, and paid for, by a property owner provided that:

- a) The Contractor informs the Engineer of the nature, quantity and location of the work requested by the property owner; and
- b) The requested work does not impact the schedule or cost of the contract work; and
- c) The Property owner and Contractor obtain all permits for requested work; and
- d) The Contractor obtains all inspections and approvals.

303-5.7 Repairs and Replacements. Add the following:

The Contractor shall be responsible to protect all new concrete work from being etched, scratched or otherwise marked following replacement thereof. If new concrete work is marked, the Contractor shall replace it at its expense and no extra costs will be allowed.

Add the following subsections:

303-5.10 PCC Curb, or Curb and Gutter

The Contractor shall remove existing improvements and construct PCC curb, or curb and gutter, over 8" CMB where shown on Plans, and shall comply with Subsection 303-5 of the Standard Specifications. **Concrete shall be 520-C-2500.**

The Contractor shall sawcut and remove existing improvements including pavement, base, subgrade, and other in-place materials as necessary for construction; prepare the subgrade; place base; and construct PCC curb or curb & gutter where noted and as shown per detail drawings. New concrete improvements shall match existing finish and pattern as directed. Contractor shall coordinate with utility companies for utility adjustments needed when constructing the work.

All PCC work must drain to grade and must pass water test.

No separate payment shall be made for crushed miscellaneous base (CMB). CMB shall be fine grade (3/4"). CMB shall be compacted to 95% relative compaction per Greenbook requirements. Unless noted otherwise, CMB will be considered as included in payment for the bid items, and no separate payment will be made therefore.

Payment for complying with the work contained in this section shall be included in the various contract bid prices for "Remove Existing and Construct PCC Curb, or Curb & Gutter over 8" CMB" per linear foot (LF), which shall include full compensation for all joints and keyways, Base, adjacent 1' AC pavement reconstruction, protection of existing trees, parkway restoration, repainting of addresses on curb faces where painted addresses have been removed due to new curb construction and repainting of red curb (top and face) where red curb has been removed due to new curb construction furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing PCC improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-5.11 PCC Curb and 6-foot Gutter

The Contractor shall remove existing improvements and construct PCC curb and 6 foot gutter over 8" CMB per Plan Detail D where shown on Plans, and shall comply with Subsection 303-5 of the Standard Specifications. **Concrete shall be 520-C-2500.**

The Contractor shall sawcut and remove existing improvements including pavement, base, subgrade, and other in-place materials as necessary for construction, place base; and construct PCC curb & 6 foot gutter as shown per plan and detail drawings. New concrete improvements shall match existing finish and pattern as directed. Contractor shall coordinate with utility companies for utility adjustments needed when constructing the work.

All PCC work must drain to grade and must pass water test.

No separate payment shall be made for crushed miscellaneous base (CMB). CMB shall be fine grade (3/4"). CMB shall be compacted to 95% relative compaction per Greenbook requirements. Unless noted otherwise, CMB will be considered as included in payment for the bid items, and no separate payment will be made therefore.

Payment for complying with the work contained in this section shall be included in the contract bid price for "Remove Existing and Construct PCC Curb & 6 Foot Gutter over 8" CMB per Plan Detail D" per linear foot (LF), which shall include full compensation for all joints and keyways, Base, adjacent 1' AC pavement reconstruction, protection of existing trees, parkway restoration, repainting of addresses on curb faces where painted addresses have been removed due to new curb construction and repainting of red curb (top and face) where red curb has been removed due to new curb construction furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing PCC improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-5.12 PCC Rolled Curb

The Contractor shall remove existing improvements and construct PCC rolled curb over 8" CMB per Plan Detail D where shown on Plans, and shall comply with Subsection 303-5 of the Standard Specifications. **Concrete shall be 520-C-2500.**

The Contractor shall sawcut and remove existing improvements including pavement, base, subgrade, and other in-place materials as necessary for construction, prepare the subgrade; place base; and construct PCC rolled curb where noted and as shown per detail drawings. New concrete improvements shall match existing finish and pattern as directed. Contractor shall coordinate with utility companies for utility adjustments needed when constructing the work.

All PCC work must drain to grade and must pass water test.

No separate payment shall be made for crushed miscellaneous base (CMB). CMB shall be fine grade (3/4"). CMB shall be compacted to 95% relative compaction per Greenbook requirements. Unless noted otherwise, CMB will be considered as included in payment for the bid items, and no separate payment will be made therefore.

Payment for complying with the work contained in this section shall be included in the contract bid price for "Remove Existing and Construct PCC Rolled Curb over 8" CMB per Plan Detail D" per linear foot (LF), which shall include full compensation for all joints and keyways, Base, adjacent 1' AC pavement reconstruction, protection of existing trees, parkway restoration, repainting of addresses on curb faces where painted addresses have been removed due to new curb construction and repainting of red curb (top and face) where red curb has been removed due to new curb construction and furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing PCC improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-5.13 PCC Sidewalk

The Contractor shall remove existing improvements and construct 3 1/2" PCC sidewalk over 4" CMB as per plan, and shall comply with Subsection 303-5 of the Standard Specifications. **Concrete shall be 520-C-2500.**

The Contractor shall sawcut and remove existing improvements including pavement, base, subgrade, and other in-place materials as necessary for construction; place base; and construct PCC sidewalk where noted and as shown per detail drawings. New concrete improvements shall match existing finish and pattern as directed. Contractor shall coordinate with utility companies for utility adjustments needed when constructing the work.

Sidewalks shall meet all ADA requirements

Sidewalks shall not be monolithic with curb or curb & gutter.

Except as specifically noted, no separate payment shall be made for crushed miscellaneous base (CMB). CMB shall be fine grade (3/4"). CMB shall be compacted to 95% relative compaction per Greenbook requirements. Unless noted otherwise, CMB will be considered as included in payment for the bid items, and no separate payment will be made therefore.

Payment for complying with the work contained in this section shall be included in the contract bid price for "Remove Existing and Construct 3 1/2" PCC Sidewalk over 4" CMB" per square foot (SF), which shall include all joints as shown in standard plans and construction details, protection

of existing trees, parkway restoration, base, full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing PCC improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-5.14 PCC Cross Gutter

The Contractor shall remove existing improvements and construct 8" PCC Cross Gutter over 8" CMB as per plan, and shall comply with Subsection 303-5 of the Standard Specifications. **Concrete shall be 520-C-2500.**

The Contractor shall sawcut and remove existing improvements including pavement, base, subgrade, and other in-place materials as necessary for construction, place base; and construct PCC cross gutter as shown per plan and detail drawings. New concrete improvements shall match existing finish and pattern as directed. Contractor shall coordinate with utility companies for utility adjustments needed when constructing the work.

All PCC work must drain to grade and must pass water test.

Except as specifically noted, no separate payment shall be made for crushed miscellaneous base (CMB). CMB shall be fine grade (3/4"). CMB shall be compacted to 95% relative compaction per Greenbook requirements. Unless noted otherwise, CMB will be considered as included in payment for the bid items, and no separate payment will be made therefore.

Payment for complying with the work contained in this section shall be included in the contract bid price for "Remove Existing and Construct 8" PCC Cross Gutter over 8" CMB" per square foot (SF), which shall include full compensation for all joints and keyways, Base, adjacent 1' AC pavement reconstruction, curb and gutter transition, furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing PCC improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-5.15 PCC Driveway Transition

The Contractor shall remove existing improvements and construct a 6" thick PCC driveway transition over 6" CMB as per plan, and shall comply with Subsection 303-5 of the Standard Specifications. **Concrete shall be 520-C-2500.**

The Contractor shall sawcut and remove existing improvements including pavement, base, subgrade, and other in-place materials as necessary for construction prepare the subgrade; place base; and construct 6" PCC driveway transition where noted and as shown per detail drawings. New concrete improvements shall match existing finish and pattern as directed. Contractor shall coordinate with utility companies for utility adjustments needed when constructing the work.

All PCC work must drain to grade and must pass water test. Transitions shall provide for smooth joins and transitions from new construction to existing improvements, without any vertical disruptions or abrupt angular changes.

Except as specifically noted, no separate payment shall be made for crushed miscellaneous base (CMB). CMB shall be fine grade (3/4"). CMB shall be compacted to 95% relative compaction per Greenbook requirements. Unless noted otherwise, CMB will be considered as included in payment for the bid items, and no separate payment will be made therefore.

Payment for complying with the work contained in this section shall be included in the contract bid price for "Remove Existing and Construct 6" PCC Driveway Transition over 6" CMB" per square foot (SF), which shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing PCC improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-5.16 PCC Curb Access Ramp

The Contractor shall remove existing improvements and construct a 6" thick PCC Curb Access Ramp over 3" CMB as per plan, and shall comply with Subsection 303-5 of the Standard Specifications. **Concrete shall be 520-C-2500.**

The Contractor shall sawcut and remove existing improvements including pavement, base, subgrade, and other in-place materials as necessary for construction prepare the subgrade; place base; and construct curb access ramp where noted and as shown per detail drawings. New concrete improvements shall match existing finish and pattern as directed. Contractor shall coordinate with utility companies for utility adjustments needed when constructing the work.

It shall be the Contractor's responsibility to install curb access ramps in strict compliance with the curb ramp details found in the APWA Standard Plan Section 111-4 which identifies maximum grades and specific dimensions.

The Contractor shall verify, with a "smart level", that maximum ramp and sidewalk grades do not exceed ADA requirements when marking the required saw cut removal limits and when setting the concrete forms, prior to pouring any curb ramp locations. It shall be the Contractor's responsibility to supervise and utilize the proper experienced personnel to ensure that the proper saw cut limits are established for all access ramp locations and the City's Representative shall not be responsible to direct the Contractor's crews or otherwise serve in this management capacity.

Integral retaining curbs shall be constructed at the back of curb ramps as necessary to match existing landscape grades. Retaining curbs shall be included in this bid item.

Curb access ramps and sidewalks shall meet all ADA requirements, and shall not create impediments to access. Curb access ramp features shall include:

- border grooves to signify change in grade
- ramps not exceeding 1:12 slope
- side ramps not exceeding 1:10 slope
- turning pads of 4'x4' minimum area and 2% cross slope maximum
- cross slopes 2% maximum
- bottom of ramps to be flush to gutters
- integral retaining curbs as necessary to match to existing landscape grades
- 3'x4' truncated dome surfaces at the bottom of the ramp adjacent to the street

Curb access ramps are not to be monolithic with curb & gutter unless otherwise directed by engineer.

Crushed miscellaneous base shall be included as incidental in all work items requiring such, and no additional compensation will be allowed.

All PCC work must drain to grade and must pass water test.

CAST IN PLACE REPLACEABLE DETECTABLE WARNING SURFACE:

Work shall include furnishing and installing a cast in place replaceable tactile tile module with new concrete curb ramps.

Material and construction of Cast in Place Replaceable Detectable Warning Surface shall be per section 303-5.5.5 of these Specifications. **The tile shall be Dark Gray color at all locations.**

Payment for "Remove Existing and Construct PCC Curb Access Ramp with 3' X 4' Detectable Warning Surface over 4" CMB" will be at contract unit price per each (EA) and shall include full compensation for all joints and keyways, Base, adjacent 1' AC pavement reconstruction, furnishing all labor, materials, tools, equipment and incidentals to construct PCC handicap ramps and associated curbs, curb and gutter, adjacent sidewalk, detectable warning surface, and to furnish and place Portland cement concrete, complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-5.17 Surface Mounted Detectable Warning Surface

Work shall consist of furnishing and installing a surface mounted tactile detectable warning surface at existing concrete curb ramp.

Detectable warning surface shall be 3' x 4' Surface Applied Tactile System Armor-Tile manufactured by Engineered Plastics Inc. (800.682.2525) or approved equal. **The tile shall be Dark Gray color at all locations.**

Payment for each (EA) surface mounted Detectable Warning Surface shall be paid at the Contract Unit Price for "Surface Mounted Detectable Warning Surface" and shall be considered full compensation for all labor, materials, including tile, tools, equipment and incidentals to accomplish the work as specified herein and no additional compensation will be allowed.

Add the following subsections:

303-9 Grouted Cobblestone Pavement

The Contractor shall remove existing improvements, grade, compact, prepare subgrade, and place Portland cement concrete with cobblestone rocks grouted in place per plan. Rocks shall vary in size and color where shown, and as specified below. Location shall be excavated, graded, and subgrade compacted to 95% minimum prior to placement of PCC. Concrete shall be placed, then cobblestones placed on top and worked into place in the wet mixture to ½ of their diameter in depth. The concrete mix slump shall be as required to work cobbles into place, yet not migrate. Slump on slope areas may need to be 1" or less. Cobbles shall be clean, and shall be secure in place after curing. Fractured edges which may cause injury shall not be allowed. Overly smooth or polished cobbles that may cause a slipping hazard shall not be allowed. Loose cobbles shall be removed, and repaired at the direction of the Engineer. Cobbles shall cover at least 80% of the surface area of the cobblestone pavement, and present a neat and uniform appearance.

Cobbles shall be type as noted per plan and as follows:

Type 1 - Southwest Builder and Stone, Mexican Beach Buff, ½" to 1", or equal

Type 2 - Southwest Builder and Stone, Mexican Sunburst Cobble, 1" to 2", or equal

Type 3 - Southwest Builder and Stone, Criva, Black, 1/8", or equal

See the following web site for additional reference information:

<http://www.southwestboulder.com/>

<http://www.southwestboulder.com/cobbles-pebbles/>

Payment for complying with the work contained in this section shall be included in the contract bid price for "Grouted Cobblestone Pavement" per square foot (SF), which shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-10 Boulder Installation

The Contractor shall install decorative rock boulders in various locations and in various sizes as shown per plan. The exact location, size, and configuration shall be as determined with the Engineer in the field. The boulders shall first be placed and oriented in the field, and approved prior to installation. Existing subgrade shall then be excavated, prepared, and compacted so that ½ of the boulder diameter will be exposed above finish grade at completion of construction.

Boulders shall be Southwest Builder and Stone, Desert Marble, in various sizes as noted per plan, and roughly 1', 2', and 3' size in diameter. It is expected that the actual boulder size will be in various rough and elongated shapes. Fractured edges which may cause injury shall not be allowed. Overly smooth or polished surfaces that may cause a slipping hazard shall not be allowed.

See the following web site for additional reference information:

<http://www.southwestboulder.com/>

<http://www.southwestboulder.com/boulders/>

Payment for complying with the work contained in this section shall be included in the Contract Unit Price for "3' Diameter Boulder", "2' Diameter Boulder" and "1' Diameter Boulder" per each (EA), which shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-11 Segmental Block Retaining Wall

The Contractor shall construct a precast concrete segmental block retaining wall as shown per plan.

Segmental blocks shall be Keystone, Legacy Stone Unit, Rockface, tan color, or equivalent as approved by the Engineer. Installation shall be per manufacturers requirements. The work shall include excavation, preparation, crushed miscellaneous base material, block units, installation, backfill, protection, restoration of irrigation and landscaping, and all other work necessary to install the block wall complete in place. Height of walls shall be sufficient to clear adjacent slope in accordance with plan details and installed per manufacturer requirements.

A minimum of six (6) inches of crushed miscellaneous base shall be placed underneath the base of the wall and will be included in this bid item. No additional compensation will be allowed.

Contractor shall excavate and backfill as required for new construction.

Payment for complying with the work contained in this section shall be included in the contract bid price for "Segmental block Retaining Wall" per square foot of Face Area (SF Face Area) of the wall, which shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed. Excess wall blocks placed below or above grade due to Contractors error in grading and construction shall not be paid.

303-12 Relocate Existing Segmental Block Wall and Reconstruct Behind New Sidewalk

The Contractor shall remove existing concrete segmental retaining wall units, and reconstruct behind new sidewalk per Plans. Work shall include removal, storing, grading and preparation, base aggregate, moisture barrier, placement, irrigation system restoration, backfill, landscape restoration, and placement of bark mulch. New installation shall be graded and conform to adjacent landscaped area.

Payment for complying with the work contained in this section shall be included in the contract bid price for "Remove Existing Segmental Block Wall and Reconstruct Behind New Sidewalk" per linear foot (LF), which shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved in constructing improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

303-13 Precast Sewer Manhole

The Contractor shall remove existing brick manhole improvements and construct a new precast sanitary sewer manhole per SPPWC 200 as shown per plan. The existing manhole base may be used if in good condition and suitable for placement of new manhole riser section. The base shall be grouted as necessary to prepare for installation of riser section. A waterproof sealant shall be applied as needed. The manhole eccentric cone section shall be rotated to place the manhole access cover within the adjacent sidewalk area, and out of the gutter. The adjacent rolled curb & gutter may be warped slightly to match to the manhole frame and cover, at the approval of the Engineer. This bid item shall include installation of a new traffic rated manhole frame and cover, and the finish shall be suitable for pedestrian and ADA traffic.

Backfill shall be with 1 sack sand-cement slurry to 12" below finish grade. The remaining backfill shall be CMB, asphalt concrete, or Portland cement concrete as required per the paving notes.

Payment for construction of sewer manhole shall be paid per each (EA) under "Precast Sewer Manhole" and shall include all labor, equipment, materials and incidentals necessary to complete the work complete in place, and no additional compensation shall be allowed therefore.

SECTION 306 – UNDERGROUND CONDUIT CONSTRUCTION

306-1 OPEN TRENCH OPERATIONS

306-1.1 Trench Excavation

306-1.1.1. General. Add the following:

All trenches shall be sawcut to the bottom of the existing concrete or asphalt section to minimize damage to adjacent pavement. The bottom of the trench shall be excavated uniformly to

the grade of the bottom of the pipe and shall be given a final trim using a string line for establishing grade, such that each pipe section when first laid will be continually in contact with the ground along the extreme bottom of the pipe.

Tunneling shall be performed under existing curb, gutter and cross-gutter as shown on the Plans. The Contractor shall exercise caution and care to prevent any damage in tunneling under these structures. There shall be no additional payment for this tunneling work. Payment for this work shall be included in the Contract Unit Price for the installation of the main pipeline.

306-1.1.2 Maximum Length of Open Trench. Replace the first paragraph with the following:

For work areas where the work zone is created by daily lane closures, the total length of work area, covering elements of the Contractor's operation, from exploratory excavations and pavement cutting to pipe installation and placement of base paving, shall be no more than 1,000 feet, or as limited by the applicable permit or traffic control staging plan. The maximum length of open trench shall be 300 feet, or the distance necessary to accommodate the amount of pipe installed within the permitted work hours, whichever is greater. The distance is the collective length at any location, including open excavation, pipe laying and appurtenant construction and backfill which has not been temporarily resurfaced.

The Contractor shall either place backfill or steel plate or place temporary or base pavement at the end of each work day so he can open all travel lanes to traffic. The last twenty (20) feet of each trench may be open provided that this length is covered with traffic rated plating. Steel plates shall be non-skid and shall be tacked down or spiked and placed flush with the surrounding pavement. The Contractor shall be required to place temporary AC at the edges of the steel plates.

The above requirements for backfilling or use of steel plates will be waived in cases where the trench is located further than 100 feet from any traveled roadway or occupied structure. In such cases, however, barricades and warning lights satisfactory to the Engineer shall be provided and maintained.

306-1.1.3 Maximum and Minimum Width of Trench. Add the following:

For sewers, potable and reclaimed water pipelines and storm drains, the bottom of the trench shall have a minimum width equal to the outside diameter of the pipe plus 12 inches and a maximum width equal to the outside diameter of the pipe plus 16 inches, unless otherwise shown on the Plans.

Add the following subsections:

306-1.1.7 Trench Over-Excavation. Trenches shall be over-excavated beyond the depth shown when ordered by the Engineer. Such over-excavation shall be to the depth ordered. The trench shall be refilled to the grade of the bottom of the pipe with either selected granular material obtained from the excavation, sand or crushed rock, at the option of the Engineer. When crushed rock is ordered, the material shall be a well-graded material of 1-1/2 inch maximum size. Bedding material shall be placed in layers brought to optimum moisture content, and compacted to 95 percent of maximum density where the pipeline trench passes under structures and 90 percent elsewhere. All work specified in this subsection shall be performed by the Contractor and paid in accordance with 3-3 of these Special Provisions.

Any over-excavation carried below the specified grade and not ordered by the Engineer, specified or shown on the Plans, shall be refilled to the required grade with suitable selected

granular material. Such material shall be moistened as required and compacted to 95 percent of maximum density under structures and 90 percent elsewhere. Such work shall be performed by the Contractor at its own expense.

306-1.1.8 Excavation in Lawn Areas. Where pipeline excavation occurs in lawn areas, the sod shall be carefully removed and stockpiled to preserve it for replacement. Excavated material from the trench may be placed on the lawn provided a drop cloth or other suitable method is employed to protect the lawn from damage. The lawn shall not remain covered for more than seventy-two (72) hours. Immediately after completion of backfilling and testing of the pipeline, the sod shall be replaced in a manner so as to restore the lawn as near possible to its original condition.

Except where trees are shown on the Plans to be removed, trees shall be protected from injury during construction operations. No tree roots over 2 inches in diameter shall be cut without express permission of the Engineer. Trees shall be supported during excavation as may be directed by the Engineer.

306-1.2 Installation of Pipe

306-1.2.1.1 General. Replace the second sentence of the third paragraph with the following:

For point repairs, there shall be 4 inches minimum of bedding below the pipe barrel of sewer.

306-1.2.2 Pipe Laying. Add the following:

At all times when the work of installing sewer is not in progress, all openings into the pipe and the ends of the pipe in the trenches or structure shall be kept tightly closed to prevent entrance of animals and foreign materials. The Contractor shall take all necessary precautions to prevent the pipe from floating due to water entering the trench from any source, shall assume full responsibility for any damage due to this cause and shall, at no cost to the CITY, restore and replace the pipe to its specified condition and grade if it is displaced due to floating. The Contractor shall maintain the inside of the pipe free from foreign materials and in a clean and sanitary condition until its acceptance by the Engineer.

Add the following Subsection:

306-1.2.14 Point Repairs and Pipe Repairs

A Point Repair shall be defined to include any repair that is less than or equal to 6' in length unless otherwise specified on the plans, drawings or bid schedule. However, the Contractor, at his option, may elect to repair or replace a larger section of pipe at no extra cost to the City.

The Contractor shall not remove a section of pipe to be replaced until the Engineer has approved the limits of the removals in the field. The approved limits of removal and construction shall be used as the basis of payment. The Contractor, at his option, may elect to remove and construct additional pipe at no extra cost to the City.

306-1.2.17 Sanitary Sewer Manholes. Add the following section:

- 1) Manhole Materials. Sewer manhole materials shall be in accordance with APWA standard plan 200-2, and Standard Specifications, as follows:

Concrete	201 (ASTM C478)
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2) Manhole Construction

- a) Soil foundations for manhole base shall be compacted to a density of 95 percent of the maximum density per ASTM D 1557. Compaction limits shall be 12-inches beyond the perimeter of the concrete base and shall be a minimum of 12-inches in depth.
- b) Manholes shall be constructed in accordance with standard plan 200-3 (Appendix IV).
- c) Invert elevation of the pipes entering or exiting the manhole and interior inverts shall not vary more than 0.05 foot from the elevations of the existing sewers.
- d) All concrete used for poured foundations, mortar, fillet, grout, and pipe supports shall be class 560-C-3250 per the Standard Specifications.
- e) Depending on the size of the pipe, connections to existing manholes shall be made by core drilling through the manhole base.

3) Precast Concrete Manholes

- a) The vertical sections of the manhole may be of different heights in order that manholes of various depths can be readily assembled.
- b) Vertical sections of the manhole shall conform to the requirements of ASTM C 478.
- c) The Contractor shall submit shop drawings of the precast sections and eccentric cone to the Engineer for review and approval.
- d) Circular precast manhole sections shall be provided with mastic gasket to seal joints between sections, such as RAM-NEK, KENT SEAL, or approved equal.
- e) All lifting holes, except in manhole covers, and gaps at joints shall be filled with a nonshrink grout.

4) Manhole Steps

- a) Manhole steps will be polypropylene-molded over 3/8-inch steel reinforcing rod, Model No. PS-2PFS. M.A. Industries, Inc., or approved equals.
- b) Steps will be spaced uniformly in each manhole. Spacing may be between 12 inches to 16 inches on center. Lower step will be 12 inches above manhole shelf or top of main. The upper step shall be 6 inches below the top portion of the eccentric cone or 6 inches below the bottom of the flat cover. Also the steps shall be aligned vertically with the opening of the cone or cover.
- c) Steps shall protrude from the manhole interior surface 5 inches.
- d) Holes shall be drilled or precast per manufacturer's recommended size, or of sufficient size to allow for step insert into the wall. If the hole has been drilled too large, then the step shall be secured in place by using epoxy grout for the full depth of the drilled hole.

- 5) Manhole Frame And Cover. The manhole frame and cover shall conform to the Standard Specifications Section 206-3 and APWA Standard Plan 200-2 "Torrance Sewer" shall be cast into the cover.
- 6) Testing Of Sewer Manholes
 - a) All sanitary sewer manholes shall be tested for leakage by plugging the inlet and outlet sewer pipes with tight plugs, filling the manhole with water to a depth of four feet above the top of the pipe or two feet above the existing ground water level, whichever is greater, and allowing one hour for saturation of the manhole material. After the one-hour saturation period, the manhole shall be refilled to the original level. Two hours after the refilling, the difference in water surface elevation from original to final level shall be measured and converted into gallons per hour lost through manhole leakage.
 - b) The allowable leakage for manholes shall be 0.75 gallon per hour per foot diameter of the manhole.
- 7) **Payment.** New sanitary sewer manholes shall be paid at the bid unit price, accepted in place. Bid price shall include all the manhole subbase, base, sections, frame and cover, and incidental items to complete the work.

306-1.3. Backfill and Densification

306-1.3.1 General. Delete the seventh through the eleventh paragraphs and replace with the following:

Where trench is less than or equal to two (2) feet wide in the roadway, the trench shall be backfilled with a sand-cement slurry (100-E-100) backfill per City of Torrance Standard Plan No. T116-M Notes 1A and 2A, unless otherwise approved by the Engineer.

Where trench is greater than two (2) feet wide or if trench walls are sloped, the trench shall be backfilled with Crushed Miscellaneous Base or other material with a sand equivalent of 30 or greater and shall be select granular material free from organic matter per City of Torrance Standard Plan No. T116-M, Notes 1A and 2A. Imported backfill material shall be in accordance with 306-1.3.7. Backfill material shall be moistened to optimum moisture content and compacted to 95 percent of maximum density in the upper 3 feet and 90 percent below the upper 3 feet.

306-1.3.4 *(omitted from this specification)*

306-1.3.5 Jetted Bedding and Backfill Compaction Requirements. Replace the entire subsection with the following:

Trench bedding and backfill densified through jetting shall be densified to a minimum relative compaction of 95 percent in the upper 3 feet of backfill and 90 percent below the upper 3 feet.

306-1.3.6 Mechanical Compaction Requirements. Replace the entire subsection with the following:

Mechanically compacted trench backfill shall be densified to a minimum relative compaction of 95 percent in the upper 3 feet of backfill and 90 percent below the upper 3 feet.

Add the following subsection:

306-1.3.9 Compaction Tests. Tests to determine materials compaction shall be performed by a separate CITY-hired subcontractor, at the CITY's expense, except that all tests which fail to meet the requirements of these Special Provisions shall be paid for by the Contractor. Maximum density shall be determined in accordance with ASTM D1557 method, modified to use five layers. Field density tests shall be performed in accordance with the test procedure specified in ASTM D1556.

306-1.5 Trench Resurfacing

306-1.5.1 Temporary Resurfacing. Delete the last two paragraphs and replace with the following:

For concrete slurry backfill, a minimum of 24 hours shall elapse before temporary resurfacing will be allowed to be placed on the backfill. All temporary resurfacing shall be flush to adjacent surfaces. The Contractor shall be responsible to immediately repair or replace any damaged or settled resurfacing. The temporary resurfacing shall be replaced with permanent resurfacing not more than 15 calendar days after placement of temporary resurfacing.

There shall be no separate payment for temporary resurfacing. Full compensation for furnishing, placing, maintaining, removing, and disposing temporary resurfacing materials shall be included in the Contract Unit Price for various items of work.

306-1.5.2 Permanent Resurfacing. Add the following:

Pavement removed or damaged in connection with performing the Work required under the Contract shall be replaced by the Contractor in accordance with these Special Provisions and City of Torrance Standard Plans. If a strip of existing pavement less than 4 feet wide is left between a trench and a gutter or curb or edge of pavement, it shall be removed and new pavement placed in its stead. In most cases if the plans show a distance of 5 feet or less between the water main centerline and the curb, there will be 4 feet or less of old pavement strip that shall be removed and replaced. In cutting or breaking up street surfacing, the Contractor shall not use equipment which will damage the adjacent pavement. If the adjacent pavement is damaged, the Contractor shall be responsible for replacing the pavement with the same kind or better at its expense.

306-1.6 Basis of Payment for Open Trench Installations. Add the following as first sentence of the first paragraph:

This subsection shall apply to payment of installed potable water mains, sewer and storm drain pipes.

Revise the second paragraph to read:

The price per linear foot for pipe and conduit in place shall be considered full compensation for all wyes, tees, bends, monolithic catch basin connections, and specials shown on the Plans; the removal of interfering portions of existing sewers, storm drains, and improvements; the closing or removing of abandoned conduit and structures; the excavations of the trench; the control of ground and surface waters; the preparation of subgrade; placing and joining pipe; connecting to existing systems; beddings; backfilling the trench; permanent resurfacing; construction survey; shoring; and all other work necessary to install the pipe or conduit, complete in place.

Delete the phrase, "excluding temporary resurfacing" from the last two paragraphs.

Add the following subsections:

306-1.6.1 Basis of Payment for Storm Drain Improvements

The Contract Unit Price for Storm Drain Improvements shall include full compensation for all work involved in constructing the catch basin and connector pipe, and shall include the costs of removing existing catch basins, local depressions and interfering portions of existing connector pipes, including abandoning in place any non-interfering connector pipe to remain. The Contract Unit Price also shall include the connection to the existing storm drain, survey, excavation, shoring, support of existing utilities & substructures, remodeling of affected sanitary sewer and water laterals, bedding, placing and compacting backfill, fine grading as needed, subgrade preparation, temporary fencing, plating and temporary paving, hauling and dumping, and all costs associated with the Permit and inspections from LACDPW.

The Contract Unit Price for Storm Drain Improvements that include local depressions shall include the construction of the local depression and the adjacent curb along its length.

Storm drain improvements on Palos Verdes Boulevard and Catalina Avenue will be per the Contract Unit price for "Storm Drain Improvements- S. Catalina Avenue" and will include removing existing and construct catch basins per SPPWC 300-3, and construct monolithic catch basin connection per plan sheet 19 and incidental items to complete the work.

Storm drain improvements on Palos Verdes Boulevard and Calle Miramar will be per the Contract Unit price for "Storm Drain Improvements- Calle Miramar" and will include adjust existing inlet to grade per plan sheet 19 and incidental items to complete the work.

306-1.8 Basis of Payment for Catch Basin Adjustments. The selection of the various depths for the catch basins was based upon hydraulic requirements and the best available data with respect to the locations of various utilities; however, in order to further assist in avoiding utilities, or for other reasons deemed necessary by the Engineer, the CITY reserves the right to increase or decrease the depth of any catch basin from that shown on the Plans. If the "V" depth of a catch basin is increased or decreased by order of the Engineer, then an adjustment (greater or less than the price bid) for the increase or decrease will be made and the amount thereof will be based upon the method stipulated hereinafter. Furthermore, any increase or decrease in cost of constructing the connector pipe resulting from the "V" change, or of the catch basin due to thickening of the concrete section or addition of steel reinforcement shall be included in said stipulated amounts. Any reduction in "V" depth exceeding 0.5 feet must be approved by the Engineer and LACDPW. Determination of these stipulated amounts involves the exclusion of all metal work and reinforcing steel not necessary to the increase or decrease of the catch basin "V" depth. Such exclusion is accomplished by the factors 0.80, 0.48, and 0.55 used in the stipulated formulae below.*

If the adjustment is an increase in the total amount of money due the Contractor, then the Contractor will be paid for such increase, in the same manner as Extra Work. If the adjustment is a decrease in the total amount of money due the Contractor, then the CITY will be entitled to and shall receive a monetary credit from the money due the Contractor.

For the purpose of these Specifications, catch basins are separated into three groups; namely, Group 1, side opening catch basins without grates and with the deepest and shallowest points of the catch basin not varying in depth by more than six inches; Group 2, side opening catch basins

without grates and with the deepest and shallowest points of the catch basin varying by more than six inches in depth; and Group 3, grating type catch basins.

In addition to the work listed in the Bid Schedule, the Contractor agrees that, if directed by the Engineer, he will either increase or decrease the "V" depth of any given catch basin and that the amount to be paid to the Contractor or credited to the CITY therefor shall be based upon the following stipulated method:

Group 1
$$\frac{(\text{Bid Price})}{\text{Average Depth on Which Bid was Based}} \times (0.80) =$$
 Adjustment per foot change in average depth as ordered by the Engineer.

Group 2
$$\frac{(\text{Bid Price})}{\text{Average Depth on Which Bid was Based}} \times (0.48) =$$
 Adjustment per foot change in average depth as ordered by the Engineer.

Group 3
$$\frac{(\text{Bid Price})}{\text{Average Depth on Which bid was Based}} \times (0.55) =$$
 Adjustment per foot change in average depth as ordered by the Engineer.

The adjustment per foot or fraction thereof of change in average depth (defined herein above) is the ratio of the total price bid for any given catch basin to the average depth of the given basin all multiplied by the applicable factor.

***NOTE:** By mutual consent of the CITY and Contractor, the factors will be changed to equal the current factor(s) used by the Los Angeles County Department of Public Works, if said factor(s) differ(s) from the factor(s) herein.

306-7 CURB DRAINS.

Add the following:

The Contractor shall replace, connect, and extend existing curb drains through the new face of curb where encountered. Drains shall match in size and like material, and shall be connected by a suitable connector as approved by the Engineer. Curb drains shall be constructed to provided positive drainage into the gutter.

Payment for curb drain shall be included as incidental in all work items requiring such, and shall include constructing the curb drain complete in place where shown on the Plans, including but not be limited to construction of the inlet and pipes or culvert, connections to existing pipes, and assurance that said outlet has positive drainage flow; no additional compensation will be allowed therefore.

Add the following subsections:

306-9 SEWER BYPASS.

1) Submittals

- a) The Contractor shall submit for the Owner's approval, a written by-pass pumping plan at least ten (10) working days prior to the beginning of any individual construction process where by-pass pumping is needed. The plan shall contain a contingency plan in the

event of pump(s) failure, the sequence of construction and a list of all piping, pumps, plugs, etc. required for each site.

- b) The Contractor shall submit a list of all the equipment to be used in by-pass pumping process including the capacity of pumps to be used.

2) General

- a) When by-pass pumping is required, the Contractor shall supply the pumps, conduits, and other equipment to divert the flow of sewage around the pipe section from manhole to manhole in which work is to be performed. The by-pass system shall be of sufficient capacity to handle existing flow plus additional flow that may occur during a rainstorm. The Contractor shall have on-site backup pumps capable of pumping 150% of the existing flow.
- b) All pump(s) drives shall have noise suppresser exhaust systems to mitigate the noise levels to less than 50db or 10db above ambient noise levels when measured at the property lines closest to the noise source.
- c) The sewage flow from the house laterals shall be maintained during construction and handled in a manner so as not to create a public nuisance or health hazard during the execution of the work to be performed under this Contract. In the event that sewage backup occurs and enters dwellings or other structures, the Contractor shall be responsible for cleanup, repair, property damage costs and all claims arising there from. All spill shall be contained and returned to the sewer system.
- d) The Contractor will be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system.
- e) The Contractor shall provide reliable sewer service to the users of the sanitary sewer at all times, so as to prevent backup and/or overflow into adjacent streets, ditches, storm sewers, and waterways during rehabilitation of the sewer pipes to allow for manhole construction, rehabilitation, and CCTV inspection.
- f) Payment for sewer bypass shall be included in the item of work requiring sewer bypass.

SECTION 307 – STREET LIGHTING AND TRAFFIC SIGNAL SYSTEMS

Delete the entire Section 307, with the exception of Section 307-7 for EXCAVATION AND BACKFILL, and replace with the Caltrans Standard Specifications Section 86:

Caltrans Standard Specifications Section 86 amended as follows:

86-1 GENERAL

86-1.01 Summary. Replace the entire subsection with the following:

The Work shall consist of furnishing and installing, modifying or removing one or more traffic signals, traffic signal master controller assemblies and lighting systems or combinations thereof, all as shown on the Plans, and as specified in these Special Provisions.

The locations of signals, standards, lighting fixtures, signs, controls, services and appurtenances shown on the Plans are approximate and the exact locations will be established by the Engineer in the field.

All systems shall be complete and in operating condition at the time of acceptance of the Contract.

86-1.06 Maintaining Existing and Temporary Electrical Systems. Add the following:

Maintenance of the existing traffic signals, street lighting, signs or approved temporary replacements shall be the responsibility of the Contractor. The Contractor shall provide twenty-four (24) hour telephone number where any intersection problem can be reported. Unless permission has been granted by the Engineer, the intersection must not be left on flash more than two (2) hours. Existing traffic signal system shall remain in operation during construction and until the new system is in operation.

All work to be done in connection with modification of traffic signals shall be performed in such a manner that the signals shall be in continuous operation, except for an approved duration between the hours of 9:00 AM and 3:00 PM on weekdays when a traffic signal may be turned off for necessary work. All signal indications, detectors and control equipment shall be maintained in operation except during shutdown hours as specified above. For permission to shutdown a traffic signal, Contractor shall notify the Engineer at least 48 hours prior to shutdown. If the traffic signal is at the intersection of two Arterial streets, the Contractor shall notify the Engineer at least 7 working days prior to shutdown. The placement of any temporary wiring necessary to maintain traffic signal operations shall provide a minimum of 18 feet vertical clearance for vehicles and a minimum of 10 feet over pedestrian areas. All safety regulations and precautions shall be observed in the installation work.

Full compensation for furnishing, installing, maintaining and removing temporary "STOP AHEAD" and "STOP" signs and for covering signs not in use shall be considered as included in the various bid items paid under "Traffic Signal Modifications" for the signal items involved and no additional compensation will be allowed therefore.

Replace the fourth paragraph with the following:

The cost for maintaining existing and temporary electrical systems shall be included in the various signal items involved under "Traffic Signal Modifications" and no additional compensation will be allowed therefore.

86-1.07 Scheduling of Work. Add the following:

The Contractor shall not begin sub-surface work until approval has been obtained from the Engineer. The Contractor shall be responsible to minimize the time between the sub-surface work and aboveground installations so as to minimize impact to the public. The Contractor's schedule for both sub-surface and aboveground work shall be based on a written estimated pole delivery date.

Add the following subsection:

86-1.08 Warranties, Guaranties and Instruction Sheets.

Guaranty for all Work, materials and labor shall be valid for a period of one year from the date of acceptance of the Work.

Full compensation for furnishing the guaranty will be considered as included in the Contract Unit Price for the items of work involved under "Traffic Signal Modifications" and no additional compensation will be allowed therefor.

86-2 MATERIALS AND INSTALLATION

86-2.04 Standards, Poles, Steel Pedestals and Posts. Add the following:

Standards for traffic signals and steel pedestals for cabinets and other similar equipment shall be located as shown on the Plans.

The galvanized faying surfaces of the connections between signal mast arms and poles shall be free of surface imperfections, such as lumps, runs, and scum, which would prevent intimate, uniform contact between the faying surfaces.

Street lighting standards, equipment and appurtenances, and exact locations for poles, risers and handholes shall conform to the specification and requirements of the Edison Company.

On streets where sidewalks are 5 feet or less in width and adjacent to the curb, the street lighting conduit risers into proposed electroliers shall be placed at the back of the sidewalk unless otherwise indicated on the Plans. The Contractor shall coordinate locations with the Edison Company.

86-2.05 Conduit

86-2.05A Material. Replace the first sentence with the following:

Conduit and fittings shall be of the type as shown on the plans and should be one of the following three options

1. Rigid metal type manufactured of mild steel and conforming to UL Publication 6 for Rigid Metal Conduit (Types 1 and 2); or
2. Intermediate metal type manufactured of mild steel conforming to UL Publication 1242 for Intermediate Metallic Conduit (Type 5); or
3. PVC schedule 80 of any type, 2-inch diameter is the minimum size to be used. All conduits crossing a street or within a roadway shall be 3 inches in diameter, and should share 1 common pullbox on each corner. Each pole on each corner will have a conduit into this common pullbox.

Conduit shall be installed under existing pavement sections to remain by Jacking or Drilling methods. At the discretion of the Engineer, conduit runs shown on the Plans to be located behind curbs may be installed in the street, within 3 feet of and parallel to the curb, by trenching as provided below. All pull boxes shall be located behind the curb or at the locations shown on the Plans.

86-2.05B Use. Delete the second sentence of the second paragraph.

86-2.05C Installation. Delete all references to Type 3 conduit. Replace the first sentence of the

first paragraph with the following:

Conduit shall be installed in conformance with the codes and regulations listed in Section 86-1.02, "Regulations and Codes" and these Special Provisions.

Replace the first sentence of the first subparagraph of the eighteenth paragraph with the following:

Conduit shall be Type 1.

Replace the fourth subparagraph of the eighteenth paragraph with the following:

The conduit shall be placed in the bottom of the trench and the trench shall be backfilled with commercial quality class 100-E-100 (60-E-0.7 metric) concrete slurry to one inch (1") below either existing pavement thickness to remain or to proposed pavement thickness if applicable. Permanent resurfacing shall match plan plus one inch (1") unless otherwise approved by the Engineer.

Replace the fifth subparagraph of the eighteenth paragraph with the following:

All excavated areas in the pavement shall be backfilled to existing grade or plated at the end of each work period.

Replace the twentieth paragraph with the following:

Conduits terminating in standards or pedestals shall extend not more than 2 inches vertically above the foundation and shall be sloped towards the handhole opening. Conduit entering through the bottom of a pull box shall terminate 2 inches above the bottom and shall be located near the end walls to leave the major portion of the box clear. At all outlets, conduits shall enter from the direction of the run.

Add the following:

After conductors have been installed, the ends of conduits terminating in pull boxes and controller cabinets shall be sealed with an approved type of sealing compound.

Add the following subsections:

86-2.05E Street Light Conduit (Existing Lights). The Contractor shall be responsible to modify the existing street lighting system to maintain power to existing lights to remain on to the satisfaction of the Engineer.

86-2.06 Pull Boxes

86-2.06A Materials. Replace the entire subsection with the following:

Pull boxes, covers and extensions for installation in the ground, structures or in sidewalk areas shall be of the sizes and details shown on the Plans. The pull box shall be precast of reinforced Portland Cement Concrete (PCC) lined with plastic with a fiberglass lid. In case of discrepancy, the following minimum sizes of pull boxes shall be used for the specified purpose:

1. Signal or Lighting Conduits

No. 5

2. Advance loop and interconnect locations	No. 5
3. Adjacent to Signal or Lighting Standards	No. 5
4. Adjacent to Controller Cabinet	No. 6
5. Adjacent to Service Cabinet	No. 5
6. Detector Termination	No. 5
7. With 4, or more, Conduits	No. 6
8. Telephone	No. 5

Plastic pull boxes shall not be used. All pull box lids shall be new and marked "TRAFFIC SIGNAL."

All ferrous metal parts shall be galvanized in conformance with the provisions in Section 75-1.05 of the Caltrans Standard Specifications.

86-2.06C Installation and Use. Replace the entire subsection with the following:

Pull boxes shall be installed at the locations shown on the Plans and shall be spaced at no more than 200-foot intervals. The Contractor may, at the Contractor's expense, install additional pull boxes to facilitate the work.

The bottoms of pull boxes installed in the ground or in sidewalk areas, shall be bedded in crushed rock as shown on the Plans. Grout in the bottom of pull boxes will not be required.

Where the sump of an existing pull box is disturbed by the Contractor's operations, the sump shall be reconstructed to the satisfaction of the Engineer.

86-2.08 Conductors and Cables. Add the following:

Three –conductor cable (3 CSC) and twelve-conductor cable (12 CSC) shall be installed in lieu of individual conductors and shall conform to Section 86-208D of the CalTrans Standard Specifications Latest Edition.

All connections must have 4 twists, soldered by the hot iron, pouring or dipping method. (Open flame soldering will not be permitted) wire-nutted, taped with Scotch 33+ or equivalent vinyl tape, double layered, 50% overlap, and coated with "Scotchkote" or equivalent electrical coating.

Existing interconnect cable shall be re-pulled into new conduit as shown on the Plans.

New interconnect cable shall be 12 pair No. 19. All cable provided shall be certified by the manufacturer as meeting the requirements of the REA Specifications for Type PE-39 cable as related to the materials and construction methods used, and the electrical and mechanical characteristics of the actual cable supplied by the Contractor.

All conductors shall be THW. The Contractor shall provide all new conductors unless otherwise shown on the Plans or provided for in these Special Provisions.

Add the following subsection:

86-2.08F Conductors. Add the following:

All loop lead-in wires shall be marked according to the resistor color code.

1. Phase **1** shall be marked with **brown** PVC tape.
2. Phase **2** shall be marked with **red** PVC tape.
3. Phase **3** shall be marked with **orange** PVC tape.
4. Phase **4** shall be marked with **yellow** PVC tape.
5. Phase **5** shall be marked with **green** PVC tape.
6. Phase **6** shall be marked with **blue** PVC tape.
7. Phase **7** shall be marked with **violet (purple)** PVC tape.
8. Phase **8** shall be marked with **gray** PVC tape.

Lane numbering shall be by phase and lane number. Lane one (#1) is the farthest left lane of a phase.

Loop numbering shall begin at the stop bar. Loop one (#1) is closest to the intersection.

Type II (jacketed) loop wire. Hot melt or epoxy sealant. Pothole filled with sealant-no cold mix.

Round loops, 6 feet in diameter shall be used. Loop stub-outs shall be placed before the BCR.

86-2.09 Wiring

86-2.09C Connectors and Terminals. Add the following:

Conductors #10 AWG or larger shall be spliced by the use of approved "C" shaped compression connectors.

86-2.09D Splicing and Terminations. Add the following:

No splicing shall be permitted except for signal and lighting commons. All conductors shall extend from the cabinet to the terminal compartment in each pole.

Conductors #10 AWG or larger shall be spliced by the use of approved "C" shaped compression connectors.

86-2.09E Splice Insulation. Replace the first sentence of the last paragraph with the following:

The Contractor shall use splice insulation "Method B".

86-2.11 Service. Add the following:

For each traffic signal, the existing electrical service point shall be reused, unless otherwise specified on the Plans.

For a service upgrade or a new service the Contractor shall install a 120/240 volt, Meyers type BF-III with type V photocell signal and lighting service with a Type III P.E.C. in a Meyers Service

Cabinet with a four-clip meter socket and test switch for safety lights. The base must be 12.25 X 14.25 mounting bolt ring. The cabinet size is to be 16' wide with a swing open upper panel. The color shall be metal finished.

The service shall also contain a 100 AMP main breaker, 50 AMP traffic signal breaker (metered), 30 AMP safety light breaker, and a double ganged 20 Amp (unmetered) Safety Light breaker. Signal circuits shall be 120V unmetered. Provision shall be made inside the service cabinet for mounting the photo-electric unit.

Install power pole riser, if applicable, and conductors to the service cabinet as directed by the serving utility.

The resistance to earth (utility ground) of the traffic signal controller cabinet ground rod(s) must not exceed 10 ohms. The ground rod for the controller cabinet shall be in the pullbox next to the cabinet, if possible at least 15 feet from the utility company ground. **Number 6 AWG cable is the minimum size acceptable for grounding.**

The controller base shall have three conduits which terminate in a pullbox next to the controller. One 2" for the service wires, and 2-3" conduits. One for the field output wires and one for the loops and interconnect. **Safety Light wiring shall not enter the controller cabinet.**

The Contractor shall pay all costs and fees required by the serving utility to complete the service connection. All such costs and fees shall be considered as included in the Contract Unit Price for items involved under "Traffic Signal Modifications."

86-3 CONTROLLER ASSEMBLIES

Type 90 Controller Assemblies. Add the following:

The Contractor shall furnish the Type 90 Econolite TS-2 Type 1 wired "P" Controller Assembly, metal finish inside and out, 12 position main panel, ASC/3-2100 controller, with Ethernet, FSK Telemetry Data Key and manuals. Also included shall be 16 channel MMU, 8 position detector rack (if video detection is to be used, 16 position for detectors), Detectors, load switches, computer drawer, wired for Opticom, RR preempt and all plug-ins for intended operations. MMU cards programmed for standard 8 phases. The Controller Assemblies shall conform to the requirements of Section 86-3.02 of the Caltrans Standard Specification, including controller unit, completely wired controller cabinet and inductive loop detector sensor units, but without anchor bolts.

Add the following subsections:

86-3.02A Controller Cabinet Foundation. The Contractor shall construct a Type M controller cabinet foundation as shown on Standard Plan ES-3C, including furnishing and installing anchor bolts (except that top of foundation shall be 30" above grade), shall install the controller assembly on said foundation, and shall make all field wiring connections to the terminal blocks in the controller cabinet.

86-3.04 Controller Cabinets. Add the following:

The battery back-up system cabinet shall be aluminum metal finish. The cabinet shall be approved by the City prior to ordering. The location of the cabinet shall be approved by the City. The battery back-up system cabinet shall be mounted to the side of the existing controller cabinet.

86-3.04C Cabinet Wiring. Add the following:

A listing of field conductor terminations, in each controller cabinet, will be furnished free of charge to the Contractor at the site of the work.

Add the following subsection:

86-3.04E Maintenance of Controller Assembly. The CITY will maintain the controller assembly after it is installed and operating to the satisfaction of the Engineer. The Contractor's responsibility shall be limited to that provided for in Section 6-1.02 of the Caltrans Standard Specifications.

86-4 TRAFFIC SIGNAL FACES AND FITTINGS

86-4.01 Vehicle Signal Faces. Add the following:

All signal section housings shall be aluminum with aluminum backplates and manufactured by McCain with Dialight LED's wired to the terminals.

The color of the signal body (face) shall be traffic green with the backplate color being flat black.

All non mast-arm signal heads shall be mounted on bronze JTC boxes and shall have a pipe connection at both top and bottom.

All mast-arm heads shall have bronze Plumbizer fittings.

All pedestrian indications are to be TYPE A. (Dialight LED with international symbols)

All pedestrian pushbuttons are to be TYPE B with ADA buttons and R62D signs (5x7).

Delete the third paragraph.

Add the following subsection:

86-4.01G Optical Units.

All signal units shall be provided with 12 inch red, amber and green L.E.D. indications.

All L.E.D indications for traffic signal units shall be manufactured either by Dialight or Gelcore and be furnished and installed by the Contractor.

86-4.01A(1) Metal Signal Sections. Replace the second sentence with the following:

Metal signal faces shall be provided with metal backplates.

86-4.01E Backplates. Delete the third, fourth and sixth paragraphs.

86-4.03 Pedestrian Signal Faces

86-4.03A Types. Add the following:

The pedestrian signal shall G.E. GT1 L.E.D. Countdown Pedestrian Signal or approved equivalent.

86-4.03B Front Screen. Replace the first paragraph with the following:

Type A signals shall be provided with a 1-1/2 inch deep eggcrate or Z-crate type screen of 0.03 inch nominal thickness polycarbonate. The screening shall be mounted in a frame constructed of 0.04 inch minimum thickness aluminum alloy or polycarbonate. The screen shall be installed parallel to the face of the message plate and shall be held in place by the use of stainless steel screws. A visor is not required for this type of screen.

86-4.04 Signal Mounting Assemblies. Replace the first paragraph with the following:

Signal mounting assemblies shall consist of 1-1/2 inch standard steel pipe or galvanized conduit, necessary fittings, slip-fitters and terminal compartments. Pipe fittings shall be ductile iron, galvanized steel, aluminum alloy Type AC-84B No. 380 or bronze. Mast arm slip-fitters, post top slip-fitters and terminal compartments shall be cast bronze. After installation, any exposed threads of galvanized conduit brackets and areas of the brackets damaged by wrench or vise jaws shall be cleaned with a wire brush and painted with 2 applications of approved unthinned zinc-rich primer (organic vehicle type) conforming to the requirements in Section 91 of the Caltrans Standard Specifications. Aerosol cans shall not be used.

Replace the seventh paragraph with the following:

For post-top mounting of signals, a slip-fitter shall be used. The slip-fitter shall fit over a 4 1/2 -inch outside diameter pipe or tapered standard end. Each slip-fitter shall be provided with cadmium-plated steel set screws, arranged as shown on the plans. Each slip-fitter used to post-top mount signals with brackets shall be provided with an integral terminal compartment. All slip fitters for post-top mounting shall be bronze.

86-5 DETECTORS

86-5.01 Vehicle Detectors

86-5.01A Inductive Loop Detectors

86-5.01A(3) Construction Materials. Replace the first paragraph with the following:

Conductor for each inductive loop detector shall be continuous and unspliced and shall conform to the following:

Type 1 loop wire shall be Type RHW-USE neoprene-jacketed or Type USE cross-linked polyethylene insulated, No. 12, stranded copper wire. The minimum insulation thickness at any point shall be 40 mils.

86-5.01A (4) Installation Details. Add the following:

The Contractor shall test the detectors with a motor-driven cycle, as defined in the California Vehicle Code that is licensed for street use by the Department of Motor Vehicles of the State of California.

The unladen weight of the vehicle shall not exceed 220 pounds and the engine displacement shall not exceed 100 cubic centimeters. Special features, components or vehicles designed to activate the detector will not be permitted. The Contractor shall provide an operator who shall drive the motor-driven cycle through the response or detection area of the detector at no less than three miles per hour and no more than seven miles per hours. The detector shall provide an indication in response to this test.

Asphaltic emulsion sealant shall be used in all sawcuts.

Add the following subsection:

86-5.01B Video Detection System

Video detection systems shall be furnished and installed in each cabinet at locations shown on the Project Plans. The video system equipment, cabling and auxiliary equipment shall be as shown below or equal, and as specified in the Appendices of this Specification and as noted on the Plans. The Engineer reserves the right to select equipment from any manufacturer for the video detection system. As such, the Engineer may ask the Contractor to provide and alternate material submittal and related cost proposal for said other equipment.

ITERIS (OR EQUAL)

Part Number	Description
CAM-RZ4AWDR	Iteris Vantage Edge 2 Camera
CAMBRKT4	Iteris Universal Mounting Bracket
EDGE2 IOM32 or TS2-1M	Iteris TS-1 or TS-2 Interface Module
	10" Flat Panel Monitor
LAMVIEW ADPT	Iteris Lens Adjustment Module
EDGE2-4N	Iteris Vantage Edge 2 Processor- QUAD
	Turn On Support and Training
	Belden Precision Video Cable RG-59/U Type 20 AWG
Catalog # 01342	General Cable Carolprene Jacketed Type SJOW cord
	Iteris Vantage Input/Output & extension Modules

Considered equal is the Econolite Autoscope ENCORE camera with Autoscope ENCORE branch Cable (3-conductor/18AWG) and other compatible, required auxillary equipment from Econolite to provide a fully-operational video detection system.

One video detection camera shall be installed on each luminaire mast arm for each direction as shown on the Plans and details contained herein and in the appendix.

The Contractor shall have a manufacturer’s representative present during installation of all cameras and cabinet modifications. The manufacturer’s representative shall provide a minimum of 16 hours (2 days) of training with CITY staff.

86-5.02 Pedestrian Push Button Assemblies

Pedestrian push buttons shall be Type B with minimum 2-inch diameter button to comply with ADA requirements and standards, and R62D signs (5"x7"). Push button shall be “Bulldog” type Model item #BDLM 2-G by Western Pacific Signal or approved equivalent.

86-6 LIGHTING

86-6.01 High Pressure Sodium Luminaires. Replace the second sentence of the first paragraph with the following:

Luminaires shall be of the “semi-cutoff” design. The optical assembly shall contain an activated charcoal filter, which prevents particulate and gaseous contamination.

Add the following:

The reflector shall be specifically designed to produce an ANSI, IES medium semi-cutoff Type II or Type III light distribution when used with a 250-watt high pressure sodium vapor lamp, 240 VAC Power Door with multi-tap transformers, and semi-cutoff optics. (General Electric Power Door fixture # MDCL25SOM22GMC32). High pressure sodium vapor lamps shall have a rated life of 24,000 hours at 10 hours per start. The 250-watt lamps shall be rated at 22,000 lumens initial. Luminaires shall be provided with integral ballast. A photoelectric control shall not be included. A luminaire with a "shorting cap" shall not be accepted.

Glare shields are not required.

86-6.01A High Pressure Sodium Lamp Ballasts. Add the following:
Integral ballasts shall be provided.

86-7 REMOVING, REINSTALLING OR SALVAGING ELECTRICAL EQUIPMENT

86-7.01 Removing Electrical Equipment. Replace the first paragraph with the following:

Existing electrical equipment shown on the Plans or specified in these Special Provisions to be removed and not reused or salvaged, and pull boxes, conduit and detector frames not reused, shall become the property of the Contractor, except the controller cabinet to be removed, which shall be salvaged to the CITY and delivered to the CITY Yard as directed by the Engineer.

86-8 PAYMENT

86-8.01 Payment. Replace the entire subsection with the following:

Payment for Traffic Signals shall be per Contract Unit Price for each item under "Traffic Signal Modifications" and shall include full compensation for: procurement and installation of signal poles/mast arms, illuminated street name sign, sign illumination, traffic monitoring station, communication conduit, or combinations thereof; labor, equipment and materials for modifying or removing such systems; temporary systems; and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing and installing, modifying, or removing the systems, combinations or units thereof, as shown on the Plans, as specified in the Specifications and these Special Provisions, and as directed by the Engineer. Said work shall also include any necessary pull boxes; excavation and backfill; concrete foundations (except when shown as a separate contract item); signs, restoring sidewalk, pavement and appurtenances damaged or destroyed during construction; salvaging existing materials; and making all required tests.

Payment for placing traffic signal loops shall be per the Contract Unit Price for "Traffic Signal Loop Detector" and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in furnishing and installing, modifying, or removing the systems, combinations or units thereof, as shown on the Plans, as specified in the Specifications and these Special Provisions, and as directed by the Engineer. All or a portion of this item may be deleted if Video Detection is used.

Payment for new street light shall be per Contract Unit Price for "Remove Existing and Install Street Light", and shall include full compensation for procurement and installation of light, furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing and installing, modifying, or removing the systems, combinations or units thereof, as shown on the Plans, as specified in the Specifications and these Special Provisions, and as directed by the Engineer. Said work shall also include any necessary pull boxes; excavation and backfill; concrete foundations (except when shown as a separate contract item); signs, restoring

sidewalk, pavement and appurtenances damaged or destroyed during construction; salvaging existing materials; and making all required tests

Payment for relocating street light shall be per Contract Unit Price for "Relocate Street Light", and shall include full compensation for removal and installation of light, furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing and installing, modifying, or removing the systems, combinations or units thereof, as shown on the Plans, as specified in the Specifications and these Special Provisions, and as directed by the Engineer. Said work shall also include any necessary pull boxes; excavation and backfill; concrete foundations (except when shown as a separate contract item); signs, restoring sidewalk, pavement and appurtenances damaged or destroyed during construction; salvaging existing materials; and making all required tests

Full compensation for all additional material and labor, not shown on the Plans or specified, which are necessary to complete the installation of the various signal systems, shall be considered as included in the prices paid for the systems, or units thereof, and no additional compensation will be allowed therefor.

Add the following subsection:

86-8.01.1 Payment for Traffic Signal Video Detection (ALTERNATE BID ITEM)

This bid item shall include all labor, work and materials, and all costs necessary to delete traffic signal loop detectors and detection equipment, and revise all related construction bid and contract documents to include traffic signal video detectors and detection equipment.

Contractor shall install the detection system or an approved equivalent per the manufacturer's specifications as specified in section 86-5.01B. The contractor shall use all necessary mounting brackets, cables and any necessary equipment to operate the system for the uses of vehicle detection at the intersections specified.

Manufacturer representative shall be present during the installation of the video detection system and cameras

Payment for complying with the work contained in this section shall be included in the contract bid price under "Alternate-1 Traffic Signal Video Detection", per lump sum (LS) for three intersection locations identified on the bid schedule. All traffic signal installations (not including the intersection with Pacific Coast Highway), shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and all of the work involved in constructing improvements complete in place as shown on the plans and specified in these Special Provisions, and no additional compensation will be allowed.

SECTION 308 – LANDSCAPE AND IRRIGATION INSTALLATION

308-2 EARTHWORK AND TOPSOIL PLACEMENT

308-2.1 General. Add the following:

The landscape work shall not begin until all other trades have repaired all areas of settlement, erosion, rutting, etc., and the soils have been re-established, recompacted and refinished to final grades. The Engineer shall be notified of all areas where the landscape work is prevented from being executed.

Surface drainage shall be provided by modeling the surfaces to facilitate the natural run-off of water. Low spots and pockets shall be filled with topsoil and graded to drain properly.

308-2.2 Trench Excavation and Backfill. Subparagraph b) is amended as follows:

- b) Waterlines continuously pressurized – 36 inches (42 inches under roadways).

Subparagraph c) is amended as follows:

- c) Lateral sprinkler lines – 12 inches (30 inches under roadways).

308-2.3 Topsoil Preparation and Conditioning

308-2.3.1 General. Substitute Class A with Class C in the first sentence of the first paragraph.

Add the following:

Before soil preparation operations are started in any area, the Contractor shall remove and dispose of all trash and any other debris on the surface of the ground.

Mowing and spraying operations shall be performed in all areas throughout the limits of the landscape portion of the Work. The sequence of operations shall be determined by the Engineer. Before applying any chemical spray material, the Contractor shall obtain from the Engineer written approval of the material to be used, the rate, and method of application.

Stolon-type grasses and weeds shall be killed by spraying with an approved weed control chemical. Other weeds shall be mowed as close to the ground as possible. Such weeds or grasses shall be removed by grubbing prior to cultivating.

Any weed growth which subsequently appears shall be killed by additional spraying before the weeds exceed two (2) inches in height. At the time of planting, each area to be planted shall be free of living weeds of any height.

The Contractor immediately shall remove and dispose of mowed weed growth and all other debris generated by clearing and grubbing when so directed by the Engineer.

308-2.3.2 Fertilizing and Conditioning Procedures. Add the following:

The conditioning material per 1000 square feet shall be:

- a) Four (4) cubic yards nitrogen stabilized organic amendment derived from redwood, fir or cedar sawdust.
- b) Fifteen (15) lbs. 12-12-12 commercial fertilizer.
- c) Fifteen (15) lbs. soil sulfur.

The Contractor shall apply post-plant fertilizer at the rate of twenty pounds (20 lbs.) per 1,000 sq. ft., thirty (30) days after planting and once again at the end of the post-construction maintenance period.

308-2.4 Finish Grading. Replace the second paragraph with the following:

The finish grade below adjacent paving, curbs or headers shall be one inch in lawn areas and three inches in shrub or groundcover areas.

Add the following subsection:

308-2.5 Bark Mulch Cover

The Contractor shall place 2" Bark Mulch Cover where shown on Plans.

Payment for installing Bark Mulch cover shall be included as incidental for various bid items of work and shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all of the work involved, complete in place.

308-4 PLANTING

308-4.1 General. Add the following:

Planting work shall not begin until the area's irrigation system has been installed, operational and passed inspection.

Inspection and approval of specimens shall be required before delivery to site; all others on delivery. Any plants rendered unsuitable for planting because of this inspection shall be considered as samples and shall not be paid for. In case the sample plants inspected are found to be defective, the Engineer reserves the right to reject the entire lot or lots of plants represented by the defective samples. Rejected plants shall be removed from the site immediately. Random samples will be inspected for root condition.

All plants shall be true to name, and one of each bundle or lot shall be tagged with the name and size of plants, in accordance with the standards of practice recommended by the American Association of Nurserymen. The root condition of plants furnished in containers shall be determined by removal of earth from the roots of not less than two (2) plants, nor more than 2 percent (2%) of the total number of plants of each species or variety, except when container-grown plants are from several different sources; in which case, the roots of not less than two (2) plants of each species or variety from each source shall be inspected by the Engineer at his option. The selection of plants to be inspected will be made by the Engineer.

All plants of the same species and container size (i.e., the same specification) shall be uniform in size and shape and at the same stage of growth to the satisfaction of the Engineer.

All plants shall be fully acclimated and in an active growing state.

The Contractor shall remove all lateral growth that is not acceptable and/or shape all plants to the satisfaction of the Engineer.

All plants shall be full-sized and shall have root systems at a fully developed state within the container.

Hair roots should extend to the edge of the container. No plant shall be root-bound. Root balls may require scarification to the satisfaction of the Engineer.

No boxed, balled or canned plants shall be planted if the ball is broken or cracked, whether before or during the process of planting. Any plant transplanted by the Contractor that dies or has

bark, branch or die-back injury shall be replaced at the Contractor's expense with an equal plant to the satisfaction of the Engineer.

Before plants are transported to the planting area, they shall be properly pruned or cut back to reduce damage by wind and to force lateral growth.

No plants shall be transported to the planting area that are not thoroughly wet throughout the ball of earth surrounding the roots. Plants should not be allowed to dry out, nor shall any roots be exposed to the air except during the act of placement. Any plant that, in the opinion of the Engineer, is dry or in a wilted condition when delivered or thereafter, whether in place or not, will not be accepted and shall be replaced at the Contractor's expense.

All inspections herein specified shall be made by the Engineer. The Contractor shall request inspection at least 48 hours in advance of the time inspection is required. Inspection shall be required on the following stages of the work:

- a) During preliminary grading, soil preparation, and initial weeding.
- b) When plants are spotted for planting, but before planting holes have been excavated.
- c) When finish grading has been completed.
- d) When all specified work, except the maintenance period has been completed.
- e) Final inspection at the completion of the maintenance period.

The Contractor's failure to obtain inspection will extend the start and/or finish of the maintenance period as applicable, unless otherwise agreed to in writing by the Engineer.

308-4.5 Tree and Shrub Planting. Replace the fourth paragraph with the following:

All planting holes shall be backfilled with a prepared soil mix conforming to the following requirements:

- 4 parts by volume nitrogen-stabilized organic amendment
- 6 parts by volume on-site soil*
- 1 lb. 12-12-12 commercial fertilizer per cubic yard of mix
- 2 lbs. iron sulfate per cubic yard of mix

*from area(s) approved by Engineer

The materials shall be thoroughly mixed to the bottom of the pit so that they are evenly distributed and without clods or lumps. Backfill shall be so placed in the pits that the plant will be at its natural growing height and the backfill material will be level one inch below surrounding soil after settlement.

Fertilizer planting tablets (twenty-one (21) gram size and shall be placed with each plant at the following rates:

- One (1) tablet per one (1) gallon container;
- Two (2) tablets per five (5) gallon container;
- Four (4) tablets per fifteen (15) gallon container;
- Eight (8) tablets per 24" box container
- One (1) tablet per each three inches (3") of box size greater than 24".

Center plant in pit or trench on slight pedestal. Face plants with fullest growth into prevailing wind. Set plant plumb and hold rigidly in position until soil has been tamped firmly around ball or roots. Position the plant in the hole and backfill no higher than halfway up the root ball. If required, place the recommended number of tablets evenly around the perimeter of, and immediately

adjacent to, the root ball at a depth which is between the middle and the bottom of the root ball. Complete the backfilling, tamp (eliminating all air voids) and water. Do not pack.

Except for street trees, construct a berm 4" above finish grade, extending 4" to 6" beyond edge of root ball, forming a watering basin with a level bottom around each plant. After a minimum of 2 days soaking and the regular irrigation system is operating, the berm area shall be smoothed to finish grade.

308-4.8 Lawn Planting

308-4.8.2 Seed. Add the following to Method B.

Prior to the application of hydro-mulch, the fine grading of all lawn areas shall be inspected and approved by the Engineer. Seedbeds shall be treated with 5% Dieldrin in granular form at the rate of 3 1/2 pounds per 1000 square feet and lightly watered. After 24 hours (minimum) have elapsed, the seedbeds shall be pre-wet prior to hydroseeding and shall be kept continually moist after hydroseeding.

All equipment used to apply hydromulch shall be subject to the approval of the Engineer. The equipment shall have a built-in agitation system and operating capacity sufficient to agitate, suspend and homogeneously mix a slurry containing not less than 40 lbs. of fiber mulch plus a combined total of 7 lbs. fertilizer solids for each 100 gallons of water.

Hydraulic spray nozzles shall provide a continuous non-fluctuating discharge. The slurry tank shall have a minimum capacity of 1,500 gallons and shall be mounted on a traveling unit, either self-propelled or drawn by a separate unit, which will place the slurry tank and spray nozzle within sufficient proximity to the areas to be seeded.

The slurry preparation shall take place at the site of Work and shall begin by adding water to the tank when the engine is at half throttle. When the water level has reached the height of the agitator shaft, good re-circulation shall be established and at this time the seed shall be added. Fertilizer shall then be added to the mixture after the seed and when the tank is at least one-third filled with water.

The engine throttle shall be opened to full speed when the tank is half filled with water. All the wood pulp mulch shall be added by the time the tank is two-thirds to three-fourths full. Spraying shall commence immediately when the tank is full.

Spray the area with a uniform visible coat using the dark color of the cellulose fiber or organic amendment as a visual guide. The slurry shall be applied in a downward drilling motion via a fan stream nozzle. It is important to ensure that all of the components enter and mix with the soil.

All slurry mixture which has not been applied within four (4) hours after mixing shall be rejected and removed from the Work at the Contractor's expense.

Special care shall be exercised by the Contractor to prevent any of the slurry from being spilled or sprayed anywhere except onto areas to be hydroseeded. Any spillage or overspray immediately shall be removed by and at the expense of the Contractor to the satisfaction of the Engineer.

Seed shall be applied at a minimum rate of five (5) pounds per 1000 square feet.

If complete and full germination is not obtained within 14 days, the Contractor shall hand seed with the same seed mixture and top dress with nitrohumous and redwood soil amendment all areas designated by the Engineer.

Add the following subsections:

308-4.10 Parkway Trees

308-4.10.1 General. The CITY maintains a tree conservation policy. The Contractor is required to assist the CITY in its efforts to conserve trees.

The Contractor shall be required to provide a Consulting Arborist (CA) to review and guide its operations that may impact trees to remain. The CA shall be required to be a member of the American Society of Consulting Arborists (310-947-0483) or have Certification as an Arborist by the International Society of Arboriculture (217-355-9411), unless otherwise approved by the Engineer.

The CA shall inspect all work locations and assess the impact of construction on existing trees to remain. If the CA determines that destructive impact is likely, Contractor is required to modify its operations to reduce the likelihood of damage to the fullest extent feasible. Contractor shall be responsible to schedule its operations in a manner that will permit the CA to view areas after removals and prior to construction, as necessary.

The CA shall spot-check representative operations and modifications employed to protect existing trees. A preliminary identification of trees that may potentially be impacted has been made by the Engineer. The CA shall check these and other locations to assure adequate protective measures are taken.

There shall be no separate payment for the services of the CA. All costs for the CA shall be included in the prices bid for appurtenant work.

308-4.10.2 Conservation Methods. Manual operations shall be employed for the removal of sod and soil to establish a finished grade within 4 feet of existing trees to remain.

Tree root systems must remain adequate to withstand heavy windstorms.

Construction equipment, materials, sand, soil, gravel, or other material shall not be placed, parked or stored on the surface of any unpaved areas within the driplines (outermost reach of branches) of street trees. No chemicals, rinstates, or petroleum products shall be deposited within the driplines of street trees.

308-4.10.3 Root Barrier and Pruning. Roots shall be pruned immediately adjacent to the edge of the sidewalk and the back of curb. Cuts shall be 4-inches wide and 7.5 inches deep adjacent to sidewalk and curb and gutter respectively. The cuts shall extend 6 feet in each direction along the curb from the center of the tree trunk for a total length of 12 feet or as directed by the Engineer.

Root pruning equipment shall be specifically designed for this purpose, sharpened adequately to sever roots in a clean manner, and equipped with padded tracks or rubber tires to prevent scraping or marking of the roadway or curbs.

Areas root pruned shall be backfilled with Class "C" topsoil either immediately upon completion of root pruning or upon completion of the adjacent work provided that adequate safety and warning devices are placed and maintained at each location.

The Contractor shall repair or replace all utility service connections and sprinkler systems within the right-of-way which are damaged or removed as a result of the root pruning operation. Repairs shall be initiated immediately upon the occurrence of damage or removal and completed by the end of each working day. Repairs and replacements shall be the equivalent of, or better than, the existing improvements in material, dimension, and function. All repairs shall be at the Contractor's expense and to the satisfaction of the Engineer.

Root sealer shall be approved by the Engineer a minimum of two (2) working days prior to the start of root pruning operations and shall be applied to all cut root areas which are larger than 50mm (2 inches) in diameter. The approved sealer shall be applied as soon as practical after the cuts have been made.

When constructing or replacing driveway approaches, roots shall not be cut by means of mechanical root cutting machines. If root removal is essential to driveway construction, roots shall be manually cut using hand implements with guidance from the CA.

Exposed tree roots shall be covered with mulch and watered from a period immediately following curb and gutter removal, until the area is backfilled following construction.

The root barriers shown in the City of Torrance Standard Plan Numbers T401 and T402 are hereby deleted from this project.

308-4.10.4 Fifteen (15)-Gallon Bronze Loquat Tree. Contractors shall remove trees as specified in section 308-4.10.5 of these Special Provisions, and plant 24" box bronze liquate tree where specified on plans. Tress shall be installed per City STD Plan T-401. All trees shall be inspected and approved by the City prior to installation. Trees that appear to be unhealthy, undersized, root bound, or otherwise deficient shall be rejected. The Contractor shall provide maintenance of the trees throughout construction and until final payment after the Notice of Construction has been posted. Any trees found deficient at that time are subject to rejection and replacement.

Payment for installing Parkway Trees shall be included in Contract Unit Price for "15 Gallon Bronze Loquat Tree" per each (EA) and shall include full compensation to install the specified 15 Gallon trees complete in place, as shown on the Plans and in accordance with these Special Provisions, including furnishing and planting trees, installation of the tree well, providing prepared topsoil, backfill, restoration of adjacent grass and parkway, and all appurtenant work.

308-5 IRRIGATION SYSTEM INSTALLATION

308-5.1 General. Add the following:

The Contractor shall remove existing irrigation from STA 16+00 to 38+00 WEST SIDE and shall install new irrigation system improvements as per irrigation plan, complete in place from approximately Station 16+00 to 38+00 on the west side of Palos Verdes Blvd as shown per irrigation plan. The new systems shall tie into existing system infrastructure (water meters) providing a complete irrigation systems. All new irrigation shall be installed to City of Torrance Standards and requirements. The Contractor shall adjust the existing irrigation at new paving and retrofit the existing irrigation from the corner of PASEO DE LA PLAYA to STA 16+00 WEST SIDE, replacing the pop-up spray heads nozzles with Toro Precision (O) Nozzles, with the same radius as the existing nozzles. Note: if the existing nozzles radius are larger than 15 feet, then leave original nozzles in place. The Contractor shall make sure the existing irrigation is reviewed and tested and to be in proper working condition.

Add to the last paragraph:

The record drawings of the irrigation system shall show locations and depths of the following items:

- a) Points of connection.
- b) Routing of sprinkler pressure lines (dimension at a maximum of 100 feet along routing).
- c) All gate valves.
- d) Quick coupling valves.
- e) Rerouting of control wires.
- f) Other related equipment (as directed by Engineer).

The Contractor shall verify the water pressure available at the site before installation of the irrigation system to make sure there is adequate pressure to properly operate the irrigation heads and valves. If the pressure provided at Work site or any other Work condition will create problems that will prevent proper operation of the irrigation system, the Engineer shall be notified before commencement of any work. Minor additions and adjustments of heads, piping, and circuits shall be made at no additional cost to the CITY where it is necessary to make the irrigation system operate properly.

308-5.2 Irrigation Pipeline Installation

308-5.2.1 General. Add the following:

Trenching machines or other mechanical means of excavation shall not be used for excavation of trenches where such use may damage existing improvements. However, in any case, the Contractor will be held responsible for any damage to existing improvements caused by their operations and any damage so occurring shall be repaired to the satisfaction of the Engineer by and at the expense of the Contractor.

Trench excavation for pipelines shall be made on the alignments shown on the Plans. Unless otherwise shown, lateral water lines shall have a minimum cover of twelve inches (12") of soil. Main water lines shall have a minimum cover of 36" of soil.

Irrigation pipe shall be installed in conformance with 308-5.2.3. Pipe flushing and pressure testing shall conform to 308-5.6.

At any location where irrigation pipe has less than 15" of cover due to interferences or other adjustments, the Contractor shall, at its own expense, provide a galvanized sleeve or other protection to the satisfaction of the Engineer. No extra costs shall be allowed for this protection.

Bedding material for irrigation piping shall be sand conforming to the requirements of 200-1.5.3 (minimum SE of 70) and 200-1.5.5.

Backfill material placed in the pipe trenches and immediately over electrical wiring shall be select material free from stones or other material that might damage the pipe or insulation on the conductors.

Backfill of irrigation pipe shall conform to 308-2.2.

Densification of bedding material shall be per 306-1.3.3.

All trenches shall be compacted to the same compaction as the adjoining area and finished flush with adjoining grades.

Unless otherwise directed by the Engineer, pressure piping shall be provided with PCC thrust blocks. Thrust blocks shall be constructed at the following places:

- a) Where pipe changes direction at fittings.
- b) Where pipe changes size.
- c) Where line terminates.
- d) Around gate valves (bottom half of valve in concrete; bolts exposed for change of top half).

308-5.3 Installation of Valves, Valve Boxes, and Special Equipment. Modify the second sentence of the fifth paragraph to read:

In lawn areas, such equipment shall be installed in valve boxes as described in 212-2.2.7 of these Special Provisions. Boxes shall be set level on 1 cubic foot (1'x1'x1') of gravel. The top of the box shall be set at grade where adjacent to pavement.

Add the following after the fifth paragraph:

Remote Control Valves shall be installed in accordance with APWA Standard Plans and manufacturer's specifications. Remote control valves shall be 6 inches to 8 inches below finished grade, measured to top of cross arm in "open" position, or as detailed on the Plans.

Master RCV shall be installed adjacent to and downstream of the cross connection preventer.

Pressure Relief Valves shall be installed as shown on the Plans in a locking valve box per 212-2.2.7 of these Special Provisions. Set for 125 lb. operation.

Add to the last paragraph.

Backflow devices shall be installed in accordance with the requirements set forth by the Uniform Plumbing Code, latest edition and latest supplements thereto, on GSP, wrapped and set in PCC per City of Torrance Standard Plan No. T711.

308-5.4 Sprinkler Head Installation and Adjustment

308-5.4.2 Location, Elevation, and Spacing. Add the following to the first paragraph:

Any deviation to spacing and location of sprinkler heads shall be reported to the Engineer and have his approval before installation.

Add the following:

The Contractor shall coordinate the installation of all sprinkler heads, including pipe, with the Plans to avoid interfering with trees or other planting and/or permanent pavement.

No spray from sprinkler heads will be permitted to throw into public streets or onto walks, driveways or parking areas.

308-5.5 Automatic Control System Installation. Replace the entire subsection with the following:

Automatic controllers shall be installed approximately where shown on the Plans after having verified exact positioning with the Engineer. Units shall be installed plumb and in a manner as recommended by the manufacturer in the enclosure specified in 212-3.4 of the Special Provisions.

For low voltage installations, a continuous wire shall be used between the controller and remote control valves. Under no circumstances shall splices exist without prior approval. All wire shall be installed in PVC casing (no direct burial) unless otherwise approved by the Engineer. Said PVC casing shall be in addition to the galvanized casing where applicable.

Sizing of wire shall be according to the controller manufacturer's recommendations and in no case less than #14 in size.

All control wires shall be black in color. All ground wires shall be white in color. An extra wire (neither white nor black) shall be installed extending to the furthest valve for possible future use.

Stamped brass identification tags shall be connected to each wire exposed in access boxes and at each remote control valve. Tag size shall be 1" long by 1/2" high, with 1/4" high numbers deeply stamped thereon indicating valve sequence number. Tags shall be tied with bare copper tie wire. Sequence shall be approved by the Engineer. All splices shall be made in a valve box and inspected by the Engineer and all remote control valves shall be tested for operation prior to backfill.

Add the following subsections:

308-5.7 Controller Charts. Upon completion of the Work, the control system shall be in operating condition with an operational chart mounted in the controller cabinet.

The Contractor shall provide two controller charts for each controller supplied showing the area covered by the automatic controller on the maximum size sheet which the controller or controller cabinet door will allow. The chart may be a reduced drawing of the actual as-built system. However, in the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged or redrawn to a size that will be readable.

The chart shall be a blackline print, and a different color shall be used to show area of coverage for each station.

When completed and approved, one of the charts shall be hermetically sealed between two pieces of plastic, each piece being a minimum 20 mils. thick. This chart shall be mounted using Velcro or approved equal type of tape. The other chart shall be given to the Engineer.

These charts shall be completed and approved prior to final inspection of the irrigation system.

308-5.8 Electrical Service and Meters. The electrical meter shall be installed in an enclosure conforming to 212-3.4 of these Special Provisions. The Contractor shall provide the enclosure and

any necessary pull boxes. The enclosure location shall be established in the field by the Engineer. The service location is shown on the Plan.

Southern California Edison Company (SCE) will furnish the electrical meter and will install the wires and conduits from the electric line to the electrical meter. It is the Contractor's responsibility to coordinate its 120 VAC electrical connections with SCE and include any delay in obtaining installation of the meter in its schedule. Controllers shall be fully automated and tested prior to start of maintenance period. SCE will bill the CITY directly for this connection.

308-5.9 Payment. Payment for the installation of the irrigation system shall be included in the lump sum (LS) Contract Unit Price for "Irrigation Improvements (STA 13+00 to 38+00 West Side)", and shall be considered full compensation for installation of a complete irrigation system in place and as specified herein and no additional compensation will be allowed. There shall be no separate payment for furnishing and installing pipe, fittings, valves, controllers, enclosures, special equipment, and electrical work. At all other locations, costs for restoration of irrigation systems and turf, relocation as needed, or repairs due to damage during construction, shall be considered incidental and included in the various bid items, and no payment shall be allowed therefore.

308-6 MAINTENANCE AND PLANT ESTABLISHMENT

Replace the entire subsection with the following:

The Establishment and Maintenance Period shall begin on the first day after all planting in this Work is completed and accepted, and shall continue thereafter until 90 calendar days have passed. Notify the Engineer at least seven (7) days in advance of completion. Failure by the Contractor to notify the Engineer will delay the start of the Establishment and Maintenance Period.

Should the Establishment and Maintenance Period be extended beyond the prescribed 60 calendar days because of rejection by the Engineer for whatever reason, the entire installation shall remain the responsibility of the Contractor unless otherwise determined by the Engineer. Any rejected material shall be replaced and the 60 calendar day Establishment and Maintenance Period shall be restarted from that time for the replaced material only.

All areas landscaped or restored under this Contract shall be maintained by the Contractor. The Contractor, without any expense to the CITY, shall weed the planted areas as needed and shall remove all accumulated debris from the landscaped areas as needed and/or as called for by the Engineer.

One month after planting, fertilize plants with 12-12-12 (N-P-K) commercial fertilizer at the rate of 3 level tablespoons per 5-gallon plant basin. The Engineer may require additional fertilization at each monthly interval.

Apply Iron Sequestrene as specified by the manufacturer immediately at the onset of any symptom of iron chlorosis. Repeat fertilization monthly for duration of maintenance period.

The above fertilization schedule may be revised by the Engineer if, in his/her opinion, optimal plant health and growth is not being obtained. The Contractor shall comply with all changes as directed.

The Contractor shall be responsible to provide adequate water to all plants without overwatering. Water conservation is mandated. The Contractor shall obtain approval from the Engineer for its proposed irrigation schedule and any changes thereto.

Add the following subsection:

308-6.1 Payment. Payment for Plant Establishment and Maintenance Period shall be included in the Contract Unit Price for items requiring such, and shall include full compensation for all tools, materials, labor, equipment, water and incidentals to complete this work in accordance with the Plans and Special Provisions.

308-7 PAYMENT

Replace the entire subsection with the following:

The Contract Unit Prices for "Irrigation Improvements (STA 13+00 to 38+00 West Side)" and "15-Gallon Bronze Loquat Tree" shall include full compensation to install the landscaping and irrigation systems (as detailed in this Section, including prepared topsoil) complete in place, as shown on the Plan and per these Specifications.

Add the following section:

308-8 GUARANTEE

The entire irrigation control system shall be guaranteed against defects in material and workmanship for a period of 1 year from the date of acceptance of the work. The Contractor shall furnish a faithful performance bond in the amount specified in the Contract Documents to cover the guarantee.

The Contractor, without expense to the CITY, shall adjust all irrigation heads to their appropriate operational heights, shall adjust and clean or replace, if necessary, all irrigation heads so that the planting areas are properly covered and they shall be adjusted so as to prevent excessive overflow into the adjacent street right-of-way.

The CITY reserves the right to make temporary repairs as necessary to keep the irrigation system equipment in operating condition. The exercise of this right by the CITY shall not relieve the Contractor of its responsibility under the terms of the Contract as herein specified.

Maintenance shall be done by qualified and experienced irrigation pipefitters.

All fifteen (15) gallon and larger trees installed under the contract shall be guaranteed to live and grow for one (1) year from the date of final acceptance of the contract work unless decline of the tree is specifically attributable to causes unrelated to installation, plant material quality, and the Contractor's maintenance practices.

All other plant material shall be guaranteed to live and grow for a period of ninety (90) calendar days from the date of final acceptance of the contract work unless decline of the plant material is specifically attributable to causes unrelated to installation, plant material quality, and the Contractor's maintenance practices.

Any plant material found to be dead, missing, or in poor condition during the post-construction maintenance period, shall be replaced immediately at the Contractor's expense. The Engineer shall be the sole judge as to the condition of the material. Replacement shall be made to the same specifications required for the original plantings.

During the guarantee period, should the Contractor fail to expeditiously replace dead plant material upon written notification by the Engineer, the City shall cause the work to be corrected and bill the actual costs incurred to the Contractor.

SECTION 310 - PAINTING

310-5 PAINTING VARIOUS SURFACES.

Add the following subsection:

310-5.6 Painting Traffic Striping, Pavement Markings and Curb Markings. Delete the entire subsection 310-5.6 and replace with Sections 84-1 and 84-2 of the Caltrans Standard Specifications.

The Contractor shall paint red curb markings as shown on the signing and striping plans. When street addresses painted on curb faces have been eliminated due to work associated with this contract, each street address shall be restored by painting on the face of new curb. Background shall be white in color and address numbers shall be black in color and 4 inches in height. Existing paint markings on curbs shall be removed prior to applying the new paint markings.

Add Sections 84-1 and 84-2 of the Caltrans Standard Specifications.

84-1.01 Description. Replace the first two paragraphs with the following:

This work shall consist of applying thermoplastic traffic stripes (traffic lines) and pavement markings at the locations and in accordance with the details shown on the Plans or designated by the Engineer, and as specified in these Specifications and Special Provisions.

The thermoplastic material shall conform to the provisions of 84-2.02 of the Caltrans Standard Specifications.

84-2.06 Payment.

Payment for traffic striping, pavement marking, and curb markings shall be on a lump sum (LS) basis per the Contract Unit Price for "Striping, Signing and Markings" and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, necessary to complete the Work.

All costs for establishing alignment of traffic stripes, pavement markings, layout, temporary pavement painting, and sandblasting of existing lines and markings shall be included and no extra costs will be allowed.

310-5.6 Exterior Coatings for Exposed Water Pipes and Appurtenances

310-5.6.1 General. The exterior surfaces of water pipes and appurtenances that will be exposed to the atmosphere inside structure or above ground shall be thoroughly cleaned and then given a shop coat of rust-inhibitive primer conforming to 210-1.8 of these Special Provisions.

Where practicable, each succeeding coat of paint shall be of a different color. Colors as specified shall be maintained unless found to be no longer available from the manufacturer. If an alternative paint system is selected and approved by the Engineer, the Engineer will select the colors to be utilized from the color samples presented.

Each coat shall produce a minimum film thickness as specified herein. In areas where this thickness is not developed, sufficient additional coats shall be applied to produce it. All coating thicknesses specified herein refer to minimum dry film thickness.

Manufacturer's instructions shall be strictly followed in the application of proprietary coatings and materials.

310-5.6.2 Ungalvanized Ferrous Metals. Prior to coating, surfaces shall be sandblasted in accordance with SSPC-SP-6 (Commercial Blast Cleaning), except that where, in the Engineer's opinion, sandblasting is inappropriate because of the size, location or nature of the surface, or because of the difficulty in protecting adjacent work, such surfaces shall be either power tool cleaned in accordance with SSPC-SP-3 (Power Tool Cleaning) or hand tool cleaned in accordance with SSPC-SP-2 (Hand Tool Cleaning).

All paint shall be brush applied unless an alternate method is approved in advance by the Engineer. Surfaces shall be primed or spot primed as required. Prime coat shall be 2 mils. followed by two succeeding coats of 2 mils. each. Total thickness of the completed coating system shall be 6 mils.

310-5.6.3 Galvanized Ferrous Metals. Prior to coating, surfaces shall be cleaned in accordance with SSPC-SP-7 (brush-off blast cleaning).

All paint shall be brush applied unless an alternate method is approved in advance by the Engineer. Surfaces shall be primed or spot primed as required. Prime coat shall be 2 mils. followed by two succeeding coats of 2 mils. each. Total thickness of the completed coating system shall be 6 mils.

310-5.6.3 Payment. There shall be no separate payment for painting and coating. This cost shall be included in the work to which it is appurtenant.

310-5.7 Painting of Reclaimed Water Piping and Appurtenances

310-5.7.1 General. The Contractor shall furnish all material, labor, and equipment necessary to line and coat all piping, valves, fittings, pipe hangers, and other ferrous metal surfaces not shop lined and coated in accordance with the following schedule:

Item	Color	No. of Coats
Valve Box Covers	Purple	2
Air Valve Blow-off Valves	Purple	2
Vault Covers (Top)	Zinc Chromate Primer	1
	Aluminum	2
Vault Covers (Underside)	Koppers No. 50	2
	Bitumastic	
Piping and Valves (In Vault)	Tenman 66	2
Guard Posts	Safety Yellow	2
Aboveground or Exposed Pipe	See Section 310-5.8.3	---

310-5.7.2 Surface Preparation. All ferrous surfaces to receive protective coatings shall be sandblasted to commercial standards per 310-2.5 prior to the application of coatings. All surface

irregularities such as weld spatter, sharp corners, rough welds, etc., shall be ground smooth. All surfaces shall be completely free of grease, oil, and other foreign material.

310-5.7.3 Aboveground or Exposed Pipeline. Pipeline which will be aboveground or permanently exposed to the environment will be prepared and coated using Zinc Rich Primer/Epoxy/Urethane coating system as follows:

310-5.7.3.1 Preparation. Surfaces may be shop primed and coated or field coated. Preparation of metal surfaces shall be in accordance with the manufacturer's recommendations and in accordance with SPC-SP10, "Near White Blast Cleaning."

Coated surfaces damaged during shop priming or installation shall be prepared and recoated in accordance with the coating manufacturer's recommendations and these specifications.

310-5.7.3.2 Coating System. The coating system shall be a 3-coat system as follows:

Primer: Tnemec; Series 90-97, "TnemeZinc," Zinc Rich Urethane Primer - 3 mils.

Intermediate: Tnemec; Series 66, "Hi-Build Epoxoline," Epoxy - Polyamide Coating - 4 mils.

Finish: Tnemec; Series 75 "Endura-Shield," Hi-Build Acrylic Polyurethane Enamel - 4 mils.

310-5.7.3.3 Inspection. Inspection shall be as follows:

Shop primed or factory finished items shall be inspected at the job site before further painting or coating. Areas of chipped, peeled, or abraded coating shall be in accordance with these requirements.

Contractor shall provide scaffolding and testing equipment to permit inspection.

Color shall be selected by the Engineer from submitted paint samples of the manufacturer's standard colors.

310-5.7.4 Payment. There shall be no separate payment for painting and coating. This cost shall be included in the work to which it is appurtenant.

310-5.8 Waterproofing (Concrete)

310-5.8.1 General. The Contractor shall furnish all material, labor and equipment necessary to waterproof the interior and exterior of all manholes and vaults.

310-5.8.2 Surface Preparation

- 1) Do not treat concrete surfaces with chemical hardeners or curing agents prior to the application of waterproofing.
- 2) Examine surfaces to be waterproofed for form tie holes and structural defects, such as honeycombing, rock pockets, faulty construction joints, cracks, etc. Repair these areas in accordance with Section 303.
- 3) Concrete surfaces shall have an open capillary system to provide tooth and suction and shall be clean, free from scale, form oil, latency, curing compounds, and any other foreign matter.

Lightly sandblast, water blast, or acid etch with muriatic acid (15% to 20%) to provide a clean absorbent surface. Saturate surfaces to be acid etched with water prior to application of acid. Vertical surfaces may have a sacked finish. Do not apply a slurry coat of water materials to horizontal concrete deck surfaces that are less than 20 hours old.

4) Use light sandblasting or etching to remove the surface glaze of dense or steel troweled concrete.

5) Abrasive clean and wash construction joints.

310-5.8.3 Application

1) After completing repairs, apply a top-coat system to the concrete surfaces to be treated, apply after curing and finishes are complete. Application of waterproofing and any point top coatings shall conform to the manufacturers recommended application procedures.

2) The Contractor shall have the manufacturer's representative advise and/or supervise the waterproofing application in person.

3) Apply crystalline waterproofing material to concrete, which has been thoroughly saturated with clean water. Moisten surfaces to be treated prior to application. Remove free water prior to application of waterproofing material.

4) Apply crystalline waterproofing to:

(a) Interior walls and roof of concrete vaults and manholes. Exterior walls of concrete vaults and manholes.

(b) Joints of precast concrete manholes as shown on the Plans.

(c) The interior surfaces shall have a white color and the exterior a gray color.

5) Apply second coat when the first coat has reached an initial set. Use light water spray on surfaces to be coated if rapid drying occurs.

310-5.8.4 Payment. There shall be no separate payment for waterproofing. This cost shall be included in the work to which it is appurtenant.

SECTION 314 – TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS

Delete the entire Section 314 and replace with Sections 84 and 85 of the Caltrans Standard Specifications (2010). Add the following:

The Contractor shall reinstall any adjacent existing striping and curb markings obliterated by new construction, as added or directed by the Engineer, and whether or not shown on the Plans for replacement. Payment shall be considered as included in the unit prices bid for various items of Work, and no additional payment will be made therefore.

The Contractor shall remove markers, markings, and striping where necessary to adjust the configuration of existing striping to new striping. The Contractor shall remove markers flush with existing pavement. The Contractor shall remove markings and striping by wet sandblasting.

Paving damaged due to the removal of raised pavement markers shall be repaired to the satisfaction of the City Engineer.

New striping and markings shall be thermoplastic. **Bike lane legends and markings shall be pre-formed thermoplastic.**

The Contractor shall furnish to the Engineer samples of materials not less than 3 weeks in advance of the date the materials are to be applied.

The Contractor shall notify the Engineer after completing layout and tracking and at least 1 week before commencing installation of striping, markings and markers. The contractor shall not proceed with installation until they have obtained the written approval of the Engineer.

84-3.04 Payment. Add the following:

There shall be no separate payment for pavement markers. Payment for complying with the work contained in this section shall be included in the contract bid price for "Striping, Signing and Markings" per lump sum (LS). Payment shall include all labor, tools, equipment, materials and incidentals necessary to complete the work and no additional compensation will be allowed therefore.

SECTION 317 - SIGNAGE

Add the following Section 317.

317-1 ROADSIDE SIGNS

The Work to be done hereunder consists of furnishing and installing signs, sign posts, re-posting existing signs, and replacing existing sidewalks where removed for sign post installation.

All signs shall be installed in accordance with the requirements of Section 56-4 of the Caltrans Standard Specifications, the State Specifications for Reflective Sheeting on Aluminum Single-Sheet and Laminated-Panel Signs, Caltrans Standard Plans and these Special Provisions. Roadside signs shall be installed at the locations shown on the Plans or where directed by the Engineer.

All signs shown on the signing and striping plans shall be new signs provided and installed by the contractor, except for existing signs specifically indicated to be relocated or to remain.

All signs shall be of 3M Diamond Grade Cubed, with 1160 protective anti-graffiti overlay film and matched components system warranty (12 years) on 0.080 Aluminum with "Torrance" and year on border.

317-2 Payment

Payment for roadside signs shall be included in the Contract Unit Price per lump sum (LS) for "Striping, Signing and Markings" and shall include all labor, materials, tools, equipment, and individuals, and for doing all the work involved in furnishing and installing roadside signs, complete in place, as shown on the Plans and these Special Provisions, and as directed by the Engineer.

PART 5 – SYSTEM REHABILITATION

SECTION 500 – PIPELINE

500-1 PIPELINE REHABILITATION

500-1.1 Requirements.

500-1.1.1 General Requirements. Add the following Subsections:

- 1) Pipeline rehabilitation shall be performed only by the following methods.

500-1.4 Cured-In-Place Pipe Liner (CIPP)

500-1.10 Folded and Reformed PVC Pipe Liner, Type A or Type B

500-1.14 UV Cured-In-Place Pipe Liner (UV-CIPP)

- 2) Design Criteria. The thickness of all pipe liners shall be calculated by the Contractor for a fully deteriorated gravity pipe design condition. The formula computes the pipe liner wall thickness required to withstand the critical buckling pressure exerted by backfill, groundwater, live, and traffic loads. It also includes an ovality factor, C, and the consideration of the long-term effects of creep. The formula, as described in ASTM F 1216:

$$T = 0.721D [(Nq_t/C)^2 / (E_L R_w B' E'_s)]^{1/3}, \text{ (inches)}$$

Where: $q_t = 0.433H_w + wH_s R_w / 144 + W_s$
= total external pressure on pipe, (psi)

$H_w =$ height of water above top of pipe, (feet) (Contractor shall use $H_w = 2'$ unless otherwise approved by the Engineer)

$w =$ soil density, (lb/ft³) = 120

$H_s =$ height of soil above top of pipe, (feet)

$R_w =$ water buoyancy factor = $1 - 0.33 (H_w/H_s)$, minimum value = 0.67

$W_s =$ live and traffic loads, (psi) (Contractor shall use $W_s = H 20$ loading, unless otherwise approved, and shall evaluate for each location)

$D =$ inside diameter of the host pipe, (inches)

$C =$ ovality factor = calculate all pipes for a minimum of 2% ovality in the circumference

$N =$ factor of safety = 2

$B' = 1/(1 + 4e^{-0.065 H_s})$

= coefficient of elastic support

$E'_s =$ modulus of soil reaction, (psi) = 750

$E_L =$ long term modulus of elasticity for the pipe liner, (psi)

Anticipated design conditions may change after the Contractor is familiar with the job and all pre-video inspections and reports are completed. If conditions change after the original submittal has been approved, the Contractor shall submit case-by-case design calculations for the Engineer's review. CIPP shall use a minimum of 7% extra resin to compensate for a resin migration/seal factor to fill joints and cracked or deteriorated pipelines to assure installed thickness meets the design criteria.

Table 500-1.1.1.a. lists the minimum finished pipe liner wall thicknesses. The thickness proposed shall be derived from an upgraded safety factor of 2.0, to provide a thicker pipe liner than what may be required by the existing conditions. For Type A PVC the SDR shall be 35 and for Type B PVC the SDR shall be 32.5, unless otherwise approved by the Engineer. All selected pipe liner thickness must be approved by the Engineer. A thinner calculated thickness shall be defaulted to the minimum thickness specified below, unless otherwise approved by the Engineer.

Table 500-1.1.1.a Minimum Pipe Liner Thicknesses

Material	C.I.P.P.	PVC Type A	PVC Type B
Specification	500-1.4	500-1.10	500-1.10
Initial Flexural Modulus, (psi)¹	250,000	280,000	145,000
Nom. I.D. (in.)	Thickness	Thickness	Thickness
6	0.19	0.23	0.23
8	0.19	0.23	0.31
10	0.19	0.29	0.31
12	0.22	0.34	0.37
14	0.30	0.40	0.43

¹ Initial Flexural Modulus is minimum per ASTM D790, Method I.

The minimum cured wall thicknesses specified above are calculated based on 50% retention of the initial flexural modulus and strength values for CIPP and 38% for PVC. The Contractor shall submit, as part of the bid, the results of long-term creep modulus testing per ASTM D2990. The long-term testing shall be done by an independent accredited testing laboratory. Test results of the same type of resin but with a different formulation from the resin system submitted are not acceptable. If the test results and regression analysis of the flexural properties of the resin system justify a wall thickness less than specified in the Table, the CITY will consider a reduction in wall thickness. In any event, the highest retention factor allowed shall not exceed 50%.

- B. Testing Requirements: For all pipeline rehabilitation systems, in addition to the final CCTV inspection, a restrained sample shall be taken for each manhole-to-manhole lining. Each sample will be checked by the Inspector using ASTM D2122-90 for PVC or ASTM D5813 for CIPP to verify compliance with the minimum thickness per Table 500-1.1.1a. A minimum of one (1) structural test shall be performed on samples taken at six (6) randomly selected sites, as directed by the Engineer. Liner materials not meeting any specified minimum value listed in the APWA Greenbook, ASTM or these specifications for which tests are required shall be removed and replaced with liner material meeting these specifications.

Structural tests shall be in accordance with the following methods:

Item	Description	ASTM Method
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1 (a)	ID Wall Thickness (PVC only)	ASTM D 2122-95 7
1 (b)	ID Wall Thickness (CIPP only)	ASTM D 5813 8.1.2
2	Flexural Strength	ASTM D 790-96a
3	Flexural Modulus	ASTM D 790
4	Extrusion Quality (PVC only)	ASTM D2152-95 or ASTM F 1057

C. There shall be no separate payment for the above described tests. Full compensation for furnishing all labor, materials, tools, equipment and incidentals for completing the tests shall be included in the contract Unit Price for Sewer Rehabilitation.

3) The Contractor shall verify the pipe diameter, ovality and length of each section of sewer prior to ordering liner material. Contractor shall immediately notify the Engineer of any discrepancies from the plans.

500-1.1.2 Submittals. To this subsection of the Standard Specifications add the following:

1) **The Contractor shall submit the following documentation as part of the Bidder's Proposal.**

- a. Documentation that the Contractor or Subcontractor is certified and licensed for the lining process.
- b. Documentation that the Contractor or Subcontractor has a minimum of 2 years installation experience and has installed a minimum of 10,000 linear feet of liner specified for this contract, using the Contractor's or Subcontractor's own forces, under the State Contractor's License as listed in the Bid Proposal or List of Subcontractors, as appropriate.
- c. Documentation shall list agency, project name, date installed, agency contact person and phone number.
- d. Documentation that the onsite foreman who will perform the installation has a minimum of 2 years' experience installing the liner product specified for this contract.
- e. Documentation of their employees' cognizance and ability to comply with all Federal and State OSHA regulations regarding confined space entry.
- f. Contractor's or Subcontractor's history stating years in service of installing liner products.
- g. Proof of having passed the Standard Specifications' chemical resistance test (Pickle Jar Test) requirement per Section 211-2 for each of the proposed lining materials shall be provided with the Bid.

The above information shall be submitted as the Bidder's Liner Methodology Qualifications package per the Instructions to Bidders.

2) The Contractor shall submit the following documentation as part of the contract submittals prior to construction:

- a. Complete information on the material composition, including, as applicable, resin and catalyst (CIPP), cell classification (PVC), material safety data sheets and design calculations, including the information required per Subsection 500-1.1.1, to be used at each location.

- b. Documentation that a minimum of 100,000 linear feet of the proposed liner product has been in successful service in the United States for a period of at least two (2) years.
- c. Manufacturer's recommended temperature and pressure limits and methodologies.
- d. Documentation of chemical resistance testing as required in Section 210-2.3.3 of the Standard Specifications or ASTM 5813 (10,000 hours minimum test time). In addition, for CIPP Contractor shall submit the manufacturer's certified Fourier Transform Infrared Spectroscopic scans of the proposed resin system.

The above information shall be submitted as the Liner Materials package per the Instruction to Bidders.

- 3) The successful Bidder shall submit, prior to the pre-construction conference, a general layout plan with sufficient detail to demonstrate familiarity with the project requirements, including pipeline accesses, equipment layout locations, sources from which construction water will be taken, and sewer bypass locations. This plan is intended to be conceptual only at the time of the pre-construction conference but is intended to be the basis of the detailed submittals required from the successful Bidder.
- 4) The Contractor shall submit certified test results on the specified structural characteristics of the rehabilitation systems for the Engineer's review.

500-1.1.4 Cleaning and Preliminary Inspection.

Add the following:

Satisfactory precautions shall be taken to protect the existing pipes from damage that might be inflicted by the improper use of cleaning equipment. Whenever hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or any tool which retards the flow of water in the existing pipes are used, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to any public or private property being served by the pipe involved.

All sludge, dirt, sand, rocks, grease, and other solid or semi-solid material resulting from the cleaning operation shall be removed at the downstream end. When hydraulic cleaning equipment is used, a suitable sand trap, weir, or dam shall be constructed in the downstream end to trap solids. Under no circumstances shall solids removed from the structures be discharged onto streets, ditches, catch basins, or storm drains. The Contractor is responsible to collect and properly dispose of these materials at a legal location.

Special additional cleaning of heavy deposits, concrete, calcium, etc., not identified will be paid for on a time and material basis as approved by the Engineer.

Contractor shall provide location to dispose of debris from cleaning process.

500-1.1.5 Television Inspection: Substitute "DVD Format" in place of "VHS-format videotape". All reference to "VCR" shall mean "DVD".

500-1.1.7 Miscellaneous.

- (a) **Service Connections.** Add the following Subsections:

- 1) Sewer Rehabilitation. Service connections (laterals) and cleanouts shall be reconnected in accordance with Standard Specifications Subsection 500-1.1.7 The Contractor shall be responsible for all costs for point repairs or excavations required for service connections or cleanouts that are broken or plugged by the rehabilitation process.

Add to the end of the second paragraph:

Laterals and cleanout opening cuts shall conform to the shape and size of the inside diameter of the existing connection. Connections shall not be made until the liner pipe has stabilized. The use of mechanical restraining devices (such as "red heads") that will restrict the pipe from completely stabilizing will not be allowed.

- 2) Sanitary Sewer Replacement. If required, service connections shall be constructed in accordance with Standard Specifications Section 306 and Standard Plans for Public Works Construction, Standard Plan 222-1.
- 3) Service Connection Locations. The plans do not accurately show service connections and shall not be used to determine the full scope of the work. The location and number of service connections shall be determined by the Contractor from the CCTV inspection and field inspection(s). It shall be the Contractor's sole responsibility to accurately field locate all existing service connections, including those to unoccupied or abandoned buildings, houses or vacant lots. The Contractor shall also verify if a connection for a cleanout is in use. The CITY shall review procedures used to determine live, inactive, stub-outs, and abandoned services. Each sewer service which is reconnected to the rehabilitated or new sewer pipe shall be documented on the plan with the exact distance from the service connection to the centerline of the nearest upstream manhole and include the address of the property served. Contractor also shall document locations of services that are plugged or removed and not reconnected.
- 4) Notification of Service Interruption. Sewage flow from house laterals shall be maintained during construction when possible. If a house lateral service must be shut down, it shall be for a period no longer than 7 hours. Service interruption will be permitted only during low flow periods between the hours of 9 a.m. and 4 p.m.
 - a) When disruption of service is required a project general information letter shall be prepared by the Contractor and approved by the CITY for the Contractor's printing and distribution to all residents, business establishments, and institutions fronting on or otherwise directly affected by the project. The Contractor shall be responsible for the distribution of this information letter to all appropriate residences, business and buildings in the project area. Distribution shall be hand delivered and by the US Postal Service (USPS), except as noted below.
 - b) A "Notice of Proposed Work" hand delivered and sent by the USPS at least ten (10) calendar days prior to work on site.
 - c) A second and different "Two-Day Notice to Proposed Sewer Shutdown" shall be hand delivered by the Contractor two (2) work days prior to work at the affected site.

- d) If the proposed disruption schedule changes for any reason, the Contractor shall hand-deliver a revised notice prior to the original date advising the affected resident of the change.
- e) The contractor shall distribute a "Notice of Utility Operation Reinstatement" in addition to the ten (10) and two (2) day notices. This notice shall be hand delivered by the Contractor immediately after reinstatement of the utility to a condition sufficient for safe and adequate usage.

5) Excavation for Reconnections.

- a) Wherever practical the existing connection shall be left in place until immediately before the new connection is made. Open excavations with exposed sewage will not be allowed unless, in the opinion of the Engineer, they are unavoidable due to the construction.
- b) Backfill of excavations shall not be made with standing sewage or water of any type. This applies to all backfill including, but not limited to, service-main connections, service-customer connections, insertion pits, point repairs, and open-cut replacement of mains or service lines. All water shall be removed by pumps if standing more than 24 hours. Once standing water is removed, a firm subbase is required before backfill can begin. The subbase may be stabilized by mixing cement with soil to absorb water; by adding 3/4" crushed rock; or by adding 2000-psi concrete. Sand shall not be placed in standing water.

6) External Service Reconnections For Sewer Rehabilitation

- a) If applicable, where an external service lateral reconnection must be made, an excavation shall be made down to the service line to be reconnected. The existing service line shall be removed only to the extent needed to complete the work. The new sewer main pipe or liner shall be cut out at the service opening to the sewer main. A prefabricated fitting (Inserta-Tee or approved equal) shall be installed in accordance with Los Angeles County Department of Public Works Standard Plan 2025-2, or in accordance with the manufacturer's specifications, so that a complete, watertight seal is accomplished when the installation is complete. The cement collar joint shall be used in locations where the sewer main is encased in concrete. The epoxy resin joint, or heat-fused joint, shall be used in all other locations. The new service line shall be connected to the existing service line with a flexible coupling and stainless steel bands, as approved by the Engineer.
- b) The coupling shall be secured to the existing service lateral, and new stub and/or stack, with stainless steel bands. The connection shall be visually inspected and approved by the Engineer before backfilling.

- 7) **Payment.** *Payment for service lateral reconnections to a rehabilitated (lined) sewer shall be made at the Bid Unit Price for "Reconnect Existing Sewer Service Lateral to Lined Sewer Pipe By Trenchless Method", complete in-place, including notifications, sealing, sewer bypass, and incidental items, and no extra costs shall be allowed.*

If a Point Repair includes a service lateral connection, all work necessary to restore the service lateral connection to the host pipe shall be included in the Bid Unit Prices for “*Point Repair on 8” VCP Sewer*”.

500-1.2 Pipeline Point Repair/Replacement.

500-1.2.1 General. Add as follows:

Approximate locations of known required point repairs of the host pipe, to be made prior to rehabilitation, are identified in Appendix 1 of the Specifications. The Contractor shall verify these locations, and, if applicable, identify additional locations that it recommends to be repaired during the preconstruction video inspection. The Contractor shall provide the Engineer a written notification of any discrepancies between the plans and information obtained in the field. The CITY shall determine what locations need repair. The Contractor is fully responsible for the adequate repair of the host pipe as necessary to ensure a successful lining installation, including reconnecting existing service laterals to the host pipe. Replacement pipe shall be no less than 3 feet long and shall use type “D” joints.

Additional work to repair any damage to the pipe lining system caused by host pipe defects, except at any location where the CITY elects not to have a recommended repair performed, or due to failure of the sewer flow bypass system, shall be the Contractor’s responsibility and completed at no additional cost to the CITY

A section of a service lateral connection and pipeline between Manhole 91-3-04 and Camino De Encanto was inaccessible to video cameras for pre-evaluation. Should this section require point repair to down stream manhole, or repair from connection to drop sewer manhole structure once accessed during repair of the section, Contractor shall repair this damage as specified in these specifications.

Add the following Subsection:

500-1.2.7 Payment. Sewer point repairs shall be paid at the Bid Unit Prices for Point Repairs, and shall include all work per Subsection 500-1.2.1 and all incidental work, and no extra costs shall be allowed.

Sewer pipe replacement, excluding point repairs, shall be per the Unit Bid Price per linear foot of pipe and shall include all work per Subsection 500-1.2.1 and all incidental work, and no extra costs shall be allowed.

Payment for provisional repairs between Manhole 91-3-04 and Camino De Encanto shall be made per the Provisional Contract Unit Price for “PROVISIONAL ITEM FOR POINT REPAIR IF NECESSARY TO DOWNSTREAM MANHOLE 91-3-04, INCLUDE POST CCTV” and “PROVISIONAL ITEM FOR POINT REPAIR IF NECESSARY FROM CONNECTION TO DROP SEWER MANHOLE 91-3-04 AND/OR DROP-MANHOLE STRUCTURE, 6 TO 9 FEET DEEP, POST CCTV, TO CONFORM TO SSPWC STD PLAN 202-2” and shall include all incidental work, and no extra costs shall be allowed.

500-1.4 Cured-in-Place Pipe Liner (CIPP Liner)

500-1.4.1 General. To this subsection of the Standard Specifications add as follows:

The CIPP liner shall extend the full length of the pipe reach to be rehabilitated and shall provide a structurally sound impermeable, seamless, joint-less, close-fitting pipe, that when cured, is mechanically bonded to the host pipe.

The Contractor shall obtain an Industrial Wastewater Permit from the CITY for the curing water disposal. The curing water must be cooled to meet the CITY's discharge standards before releasing the flow.

500-1.4.2 Material Composition and Testing. To this subsection of the Standard Specifications add as follows:

- 1) Tube: The tube shall be supplied by the system licensor to the licensed Contractor in accordance with Section 5.1 of ASTM 1216-89 and/or the latest revision thereof. The side of the liner exposed to the sewer flow after inversion is completed shall have a layer of polyurethane bonded to it with a minimum thickness of 0.01 inch and shall be pinhole free. All seams and patches in the polyurethane coating shall be inspected under a black light. The tube shall be placed under a vacuum at the factory and submerged in a die bath to verify that it is pinhole free. The Contractor shall provide proof to that effect. The felt tube shall be continuous and of sufficient length to extend the entire reach (from entry to end point) of the host pipe to be rehabilitated. No joints or laps will be permitted between manholes. The Contractor shall comply with all requirements specified by Subsection 500-1.1.1 and provide documentation to verify this compliance prior to installation.
- 2) One 18-inch long restrained and cured sample shall be taken from the downstream and any intermediate manholes, unless otherwise specified by the Engineer, and shall be checked by the inspector pursuant to Subsection 500-1.1.1 to verify the minimum wall thickness and conformance with the flexural properties listed in Table 500-1.1.1.
- 3) Resin: The Contractor shall furnish an epoxy or epoxy-vinyl-ester resin and a compatible catalyst system as specified by the resin manufacturer that has successfully passed all testing requirements included in the Specifications. The resin manufacturer shall provide the Contractor with the recommended curing cycle and shall submit the same to the Engineer. Certified copies of all test reports performed by the independent testing laboratory on the properties of the selected resin and on the properties of the field liner coupons, as specified in Subsections 4-1.4 and 500-1.1.1 shall be submitted to the Engineer.

500-1.4.4 Chemical Resistance. (Replace paragraph as follows):

Proof of having passed the Standard Specifications' chemical resistance test (Pickle Jar Test) requirement per Section 211-2 for each of the proposed lining materials shall be provided with the Bid.

500-1.4.5 Installation. To this subsection of the Standard Specifications add the following:

The installation procedures may vary with the methods of rehabilitation techniques/processes approved for the project. The Contractor shall, in his or her submittal, give information, essentially following the same format as in Subsections 500-1.4.5.1, 500-1.4.5.2, 500-1.4.6.1, and 500-1.4.6.2, or give detailed instructions, procedures, and the steps to be followed for the installation of the proposed CIPP liner. All such instructions and procedures shall be submitted for review by the Engineer and shall be carefully followed. Materials, delivered to the jobsite, shall be accompanied

by appropriate (individual) documentation listing physical properties, curing, and/or reforming temperatures and pressures.

Add subsections as follows:

500-1.4.5.1 Wet Out. The Contractor shall designate a location where the felt tube will be impregnated (“wetted out”) with resin. The quantity of a resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and stretching during installation, and for the loss of resin through cracks and irregularities in the host pipe. The calculations for the quantity of resin required shall be submitted and approved by the Engineer prior to wetting out the liner. A roller system and vacuum shall be used to uniformly distribute the resin throughout the tube to thoroughly saturate the felt tube prior to its dispatch for installation. The gap in the roller shall be verified every 50 feet. The Contractor shall inform the Engineer at least four (4) calendar days in advance, to inspect the materials and the wet out procedure. A catalyst system or additive(s) compatible with the resin and tube may be used per the manufacturer’s recommendation. They shall not impair or reduce the resin’s quality to withstand the minimum chemical resistance criteria.

500-1.4.5.2 Insertion.

The wetted out tube shall be transported and kept in a refrigerated truck, until it is inserted through an existing manhole by the approved technique/process of the installer or the Contractor. The Contractor shall use either an end-stop or hold-back mechanism to prevent the felt tube from extending into conduits which are not to be rehabilitated. The Contractor shall protect the project site in accordance with Subsections 7-8 and 7-9 of the Standard Specifications and shall be responsible for repairing or replacement of all existing improvements within the project site which are damaged and/or removed as a result of the Contractor’s operations, at no cost to the CITY.

500-1.4.6 Curing. Add as follows:

After the insertion is completed, the Contractor shall cure the liner in accordance with ASTM F1216 Section 7.6 Curing or ASTM F1743 Section 6.6 Curing.

- 1) All water used shall be from metered supply and paid for by the Contractor. If the Contractor is required to place water hoses in roadways or across driveways, Contractor shall provide temporary ramps to protect water hoses from traffic, to the satisfaction of the Inspector. The time required to cure, which is a function of the pipeline diameter, length, and curing temperature, shall be determined by the Contractor in accordance with the resin/catalyst system of the resin manufacturer. The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing water. It is also required that thermocouples be placed on the top and bottom of the impregnated tube and the host pipe at the upstream and downstream manhole(s), as well as in any intermediate manhole to determine the temperatures during the resin curing process. Thermocouples shall be connected to a recording device at the heater truck to have a continuous measurement of the thermocouples on the tube as well as the intake and output water temperatures at the water heater. If a permanent recording device is not available, then a hand-held thermocouple recording device must be used to measure all temperature readings during the curing and cooling procedure. The recording device used to measure all temperatures shall be calibrated prior to use on the jobsite. The Contractor shall provide all calibration records for all equipment used on the job, upon request by the Engineer.

Remotely located thermocouple readings and the temperature of the circulating water at the downstream end of the liner (away from the heater truck) should be recorded every 15 to 30 minutes. All readings, as well as recording charts, shall be described and attached to a Cure Summary Report. The initial cure may be considered completed when the exposed portions of the felt tube appear to be hard and the remote sensing device indicates the temperatures to be adequate, as recommended by the resin/catalyst system manufacturer and approved by the Engineer. However, the Contractor remains fully responsible for the accuracy of his or her work and for determining when curing has been completed to meet the specified properties. Care shall be taken during elevated temperature curing so as not to overstress the fiber liner. Curing temperatures and duration shall comply with data and information previously submitted.

- 2) The cured liner shall have a smooth finish inside. Any roughness that may affect the hydraulic conditions shall be removed by sanding or trimming the “fins” or folds. Such trimming shall not change the required thickness or structural strength of the liner. The Contractor may either apply a sealant compatible with the material to areas where sanding has taken place or replace the pipe liner from manhole to manhole, at no additional cost to the CITY.

Add subsections as follows:

500-1.4.6.1 Cool Down.

The Contractor shall cool the hardened pipe to a temperature below 38°C (100°F), before relieving the water column. Cool water may be added to the water column while draining hot water from a small hole at the opposite end of the CIPP, so that a constant water column height is maintained until cool-down is completed. Care shall be taken in the release of the water column so that a vacuum will not develop that would damage the newly installed pipe. Samples shall be obtained for testing as specified in Subsection 500-1.4.2 Material Composition and Testing. The cool down process may vary depending on the installation technique of the manufacturer/Contractor.

500-1.4.6.2 Finished Pipe.

- 1) The finished CIPP shall be continuous over the entire length from manhole to manhole and shall be free from visual defects such as foreign inclusions, dry spots, keel, boat hull, pinholes, wrinkles, and other deformities. The liner passing through or terminating in a manhole shall be carefully cut out. The cut shall be smooth and parallel with the manhole wall. The finished liner shall not protrude into the manhole over 2 inches. The area/annular space between the host pipe and the CIPP liner shall be sealed with the approved epoxy or other material that is compatible with the CIPP liner and shall provide a watertight seal. The sealant system and materials shall conform to Subsection 210-2.3.3. It shall also meet the leakage requirements of the pressure test specified in these Contract Documents. During the warranty period, any defect identified by the Engineer which will affect the integrity or strength of the pipe liner shall be repaired at the Contractor’s expense.
- 2) Installations will not be considered complete until the lining is installed, all final cuts are finished, all channels and benches in the manholes are installed or refinished, all miscellaneous work described in the Contract Documents is complete, the final video inspection is performed, and as-built information is submitted to and accepted by the CITY.

500-1.4.6.3 Process Limitations.

- 1) Though the installation process may be licensed or proprietary in nature, the Contractor SHALL NOT change any material, thickness, design values, or procedural matters stated in the submittals without the Engineer's prior knowledge and pre-approval. The Contractor shall submit, in writing, full details about component materials, their properties, and installation procedures and abide by them fully during the entire course of the project.
- 2) The minimum required performance criteria, standards, physical/structural properties, chemical resistance tests, and the liner thickness as given in this specification shall be strictly complied with.
- 3) The CITY will not allow intermediate excavations for additional manholes not shown on the plans.

500-1.4.7 Service Connections. Add as follows:

After curing is complete, the Contractor shall re-establish all live service connections per Subsection 500-1.1.7(a). If the Contractor cannot re-establish a service connection as specified above within specified normal working hours, the following shall apply: The Contractor must open all live laterals with preliminary cuts to relieve the flow the same day of installation. The preliminary cut shall be a smooth round cut, with a minimum diameter of 3 inches. Final cuts shall be completed during normal working hours within a week from the date of the liner installation, unless otherwise approved by the Engineer.

Add a subsection as follows:

500-1.4.9 Payment.

The Bid Unit Prices for installing liners to rehabilitate sewer mains in the manner described shall include full compensation for all materials, labor, tools, equipment, and incidentals required to install liner within the host pipes. Payment for installing liner shall also include the cost of sealing the liner in the manholes, reworking the manhole inverts, benches, and shelves, etc. Payment will be for actual linear footage for liner installed in the field and shall be measured between the manholes from the wall, next to the insertion invert, to the invert wall of the downstream manhole, unless the liner extends through the manhole. Television inspection after rehabilitation (post-CCTV) shall be performed as specified and included in the liner installation cost. As-built information and all other relevant submittals shall be considered incidental to the rehabilitation.

The Contractor shall be responsible for making adequate and suitable arrangements for any bypass pumping that may become necessary to prevent any backflow onto private or public property between the time the liner is inserted and the service re-connections have been made, tested, and approved by the CITY. Bypass pumping shall be incidental to the cost of the sewer rehabilitation.

All costs for required point repairs in case of collapse of the pipe or failure of the new liner, and excavations made for service connections which are broken or found plugged by the rehabilitation process, shall be the responsibility of the Contractor, and no extra costs shall be allowed. No additional payment shall be made for work considered incidental or complementary to a Bid item. The Contractor shall clarify, for his or her own benefit, that all work required, incidental or otherwise, has been included in the items listed in Bidder's Proposal prior to submitting a Bid.

500-1.10 Folded and Re-Formed PVC Pipe Liner

500-1.10.1 General. Add as follows:

- 1) Folded and re-formed pipe liner shall extend the full length of the pipe reach to be rehabilitated and shall provide a structurally sound, impermeable, seamless, joint-less pipe which tightly fits the host pipe. Folded and re-formed PVC pipe lining consists of the reconstruction of the gravity sewer pipe by insertion of a preheated, folded PVC pipe which is then further heated and progressively unfolded and expanded against the interior surface of the host pipe. The finished PVC pipe liner, when installed and cool, shall extend over the installation length in a continuous, tight-fitting “pipe-within-a-pipe” manner. The minimum thickness of the pipe liner shall be in accordance with Subsection 500-1.1.1.
- 2) The factory test results to show compliance with ASTM D 1784 Cell Classification 13223-B and the requirements of Subsection 500-1.10.2 for Type A, or 12111-C and requirements of Subsection 500-1.10.3 for Type B for each coil of pipe shall be submitted to the Engineer before installation.
- 3) PVC pipe liner when installed and cool shall have the following minimum values when tested in accordance with ASTM standards by an independent testing laboratory approved by the Engineer.

	Flexural Strength	Flexural Modulus	Tensile Strength	Impact Resistance
ASTM Test	D 790	D 790	D 638	D 2444
TYPE A	2,200 psi	280,000-320,000 psi	5,000-6,000 psi	Pass/fail
TYPE B	1,930 psi	145,000-280,000 psi	3,500-5,000 psi	Pass/fail

- 4) Certified copies of all test reports performed by an independent testing laboratory, as specified in Subsections 500 4-1.4 and 500-1.1.5, shall be submitted to the Engineer.

500-1.10.2 Type A Folded and Re-Formed PVC Pipe Liner. To this subsection add and revise as follows:

(c) Material and Equipment Acceptance. Add as follows:

The Contractor shall submit factory test results and the date the PVC liner was manufactured for each coil of pipe prior to installation for approval. No pipe liner shall be installed later than six months from date of manufacture.

(f) Installation and Field Inspection. Add as follows:

8) The Contractor shall furnish and maintain in good condition all equipment necessary for the proper execution of the work as specified. The method of installation shall be compatible with the manufacturer’s recommended practices. Before installation, the pipe coils shall be checked by the inspector pursuant to Subsection 500-1.1.1 to verify compliance with the minimum wall thickness.

a) Insertion: The liner pipe shall be inserted into the existing sewer through existing manholes, without modification of the manholes.

b) Forming: If the liner fails to form, the Contractor shall remove the failed liner and replace it with a new liner. This work shall be performed without additional costs to the City. After the liner has been formed, the ends of the liner shall be cut away at both manholes.

c) Finish: The finished liner shall comply with Subsection 500-1.4.6.2. Any defect which will affect the integrity or strength of the liner pipe or cause a problem with the service connections, due to improper finishing or channels or benches, shall be repaired at the Contractor's expense.

500-1.10.3 Type B Folded and Re-Formed PVC Pipe Liner. To this subsection add and revise as follows:

The Contractor shall submit factory test results and the date the PVC liner was manufactured for each coil of pipe prior to installation for approval. No pipe liner shall be installed later than six months from the date of manufacture.

The Contractor shall furnish and maintain in good condition all equipment necessary for the proper execution of the work as specified. The method of installation shall be compatible with the manufacturer's recommended practices. Before installation, the pipe coils shall be checked by the inspector pursuant to Subsection 500-1.1.1 to verify compliance with the minimum wall thickness.

500-1.10.5 Service Connections. Delete this subsection replace with the following:

Service reconnection shall comply with Subsection 500-1.1.7(a).

Add the following subsection:

500-1.14 Ultraviolet Cured-In-Place Pipe (UV-CIPP) Liner Rehabilitation

500-1.14.1 Description of Work

This work shall include the furnishing of all materials, equipment, tools and labor required for the rehabilitation of existing pipes by the installation of a resin impregnated Ultra-Violet (UV) cured-in-place pipe (CIPP) lining system. The prefabricated seamless tube shall be constructed of fiberglass fabric entirely encapsulated in an inner and outer membrane and impregnated with resin as recommended by the manufacturer, prior to insertion in the host pipe. Upon UV-curing, the resin-impregnated seamless tube shall form a structurally sound, watertight, tight-fitting pipe-within-a-pipe. The light-cured lining system shall be installed in accordance with the manufacturer's specifications.

500-1.14.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

ASTM F 2019-03 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP)

ASTM F 1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of Resin-Impregnated Tube.

ASTM D 543 Test Method for Resistance of Plastics to Chemical Reagents

ASTM D 638 Standard Test Method for Tensile Properties of Plastics

ASTM D 790 Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics, and Electrical Insulating Materials

500-1.14.3 SUBMITTALS

Materials proposed shall meet the requirements of the contract specifications and shall be submitted for review and approval by the CITY.

The UV-CIPP system technical literature shall be submitted for review by the CITY.

The Contractor installing the UV-CIPP must be an approved and trained applicator of the system being installed.

500-1.14.4 SAFETY

All work safety requirements of pertinent regulatory agencies shall be complied with. The site shall be secured for working conditions in compliance with the same. Signs and other devices shall be erect as are necessary for the safety of the workers at the work site.

All work shall be performed in accordance with applicable OSHA standards. Emphasis shall be placed upon the requirements for entering confined spaces and with the equipment being utilized for pipe lining.

500-1.14.5 CURED-IN-PLACE PIPE MATERIALS: The glass fiber tubing shall be seamless and spirally wound, including an exterior and interior film that protects and contains the approved resin used in the liner for this project. The exterior film will be provided with a UV light blocker foil.

- 1) Tube: The tube shall consist of a seamless, spirally wound glass fiber that is flexible and has strain values (expandable) of equal to eight (8) to ten (10) percent. The tube shall be constructed to withstand installation pressures and have sufficient strength to bridge missing pipe. The wet out tube shall have a uniform thickness that when compressed at installation pressures will meet or exceed the design thickness.
- 2) The tube shall be sized such that when installed, will tightly fit the internal circumference and length of the original pipe.
- 3) The glass fiber tube shall be saturated with the appropriate resin using a resin bath to allow for the lowest possible amount of air entrapment. The liner will then be formed into a spirally wound shape for the purpose of being seamless in its cured state. An inner and outer material will be added that are both impervious to airborne styrene, with the outer material also having UV blocking characteristics. The inner membrane will be removed after the installation and curing processes are completed.
- 4) The wall color of the interior pipe surface of UV-CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.
- 5) The liner should be seamless in its cured state to insure homogenous physical properties around the circumference of the cured liner.
- 6) The manufacturer will test the raw materials and liner materials at various stages of manufacturing on every liner, including taking samples of every finished liner and conducting tests for e-modulus, tensile, wall thickness and porosity.
 - a) Resin – The resin system shall be SS approved by the engineer, with a catalyst system that when properly cured within the tube composite meets the physical properties of and adheres to ASTM 2019:

Flexural Modulus	1,100,000 psi
Flexural Strength	21,800 psi
Long term E-modulus	675,000 psi
Liner wall porosity	APS Standard

- b) Chemical Resistance – The chemical corrosion resistance of the actual resin system used by the Contractor shall be tested by the resin manufacturer in accordance with ASTM F 1216.

500-1.14.6 INSTALLATION OF THE GLASS FIBER LINER

- 1) The approved system must utilize an outer and inner film to ensure that the liner remains intact during the insertion process and to protect the resin at all times during the installation and curing process from water and debris contamination, and resin migration which will lower the physical properties of

any thermosetting cured liner. If there is any damage to the outer film, the film shall be repaired immediately with styrene-proof tape.

- 2) A constant tension shall be applied to pull the glass fiber liner into position in the pipe. Once inserted, end plugs shall be used to cap each end of the glass fiber liner to prepare for pressurizing the liner. The end_plugs should be secured with straps to prevent them from being expelled due to pressure. As with all CIPP products, liner restraints should be used in manholes.
- 3) A slip sheet shall be installed on the bottom half of the pipe prior to liner insertion, for the purpose of smoothing out the bottom of the liner to increase flow characteristics.
- 4) The glass fiber liner shall be cured with UV light sources at a constant inner pressure. When inserting the curing equipment in the liner, care shall be taken to not damage the inner film material.

The UV light sources shall be assembled according to the manufacturer's specifications for the liner diameter. For the liner to achieve the required water tightness and specified mechanical properties, the following parameters shall be controlled during the entire curing process, giving the Engineer a record of the curing parameters over every segment of the entire length of the liner. This demonstrates that the entire liner is cured properly. The recording shall include:

- Curing speed
- Light source working & wattage
- Inner air pressure
- Exothermic (curing) temperatures
- Date and time
- Length of liner

This shall be accomplished using a computer and data base that are tamper-proof. During the curing process, infrared sensors shall be used to record curing data that shall be submitted to the Engineer with a post CCTV inspection on DVD.

The parameters for curing speed, inner air pressure and wattage are defined in the Quality Tracker UV curing protocol issued by the manufacturer.

The optimal curing speed, or travel speed of the energized UV light sources, is determined for each length of liner based on liner diameter, liner thickness, and exothermic reaction temperature.

- 5) The inner film material shall be removed and discarded after curing to provide optimal quality of the final product.

500-2 MANHOLE AND STRUCTURE REHABILITATION

500-2.1 General. Delete the second sentence and add the following:

As indicated in Subsection 306-6, the pipe liner may be installed through the manholes as part of the lining operation and then cut, secured, and finished within the manhole base in accordance with the Specifications. The method of relining calls for terminating the line just outside the existing pipe ends, then the manhole channel shall be modified under dry conditions utilizing an epoxy grout to create a smooth flow surface throughout the channel between pipe liner ends on a constant downward grade between the manhole inlet invert and the manhole outlet invert. There shall not be any exposed liner lip or edge exceeding 3/16-inch allowed in the manhole channel below the pipe spring line.

Manhole rehabilitation shall be by Air-Placed Concrete and Polyurethane Protective Lining only, per Standard Specifications Subsection 500-2.3 and 500-2.7.

Add the following subsection:

500-2.3.2.1 Manhole Channel and Shelf Repairs.

Manhole channel and shelf repairs shall include filling in holes and voids in existing channels and shelves shown on the plan to be repaired utilizing epoxy grout. Channels that are modified to complete the pipe lining process pursuant to Subsection 500-2.1 in manholes not otherwise shown to be repaired shall not be included. The manhole channel shall be modified under dry conditions to create a smooth flow surface throughout the channel between pipe liner ends on a constant downward grade between the manhole inlet invert and the manhole outlet invert. There shall not be any exposed liner lip or edge exceeding 3/16-inch allowed in the manhole channel below the pipe spring line.

500-2.10.2 Payment. Add the following:

Payment for manhole and structure rehabilitation shall be made at the Contract Lump Sum Price for each structure in accordance with Subsection 500-2.1 and 500-2.3.2.1, and all cost thereof.

500-2.11 Manhole Steps. Add the following:

Manhole steps shall be removed and shall not be reinstalled.