

CONSTRUCTION SPECIAL PROVISIONS

STANDARD SPECIFICATIONS AND STANDARD PLANS

Where the term "Standard Specifications" is used, it refers to the Standard Specifications of the California Department of Transportation, 2015 edition. "Standard Plans" means the Standard Plans of the same Agency, 2015 edition.

REVISED STANDARD SPECIFICATIONS

Revised Standard Specifications set forth in these special provisions shall be considered as part of the Standard Specifications for the purposes set forth in Section 5-1.02, "Contract Components," of the Standard Specifications. Whenever either the term "Standard Specifications is amended" or the term "Standard Specifications are amended" is used in the special provisions, the text or table following the term shall be considered an amendment to the Standard Specifications. In case of conflict between such amendments and the Standard Specifications, the amendments shall take precedence over and be used in lieu of the conflicting portions.

A copy of the current amendments is available at http://www.dot.ca.gov/hq/esc/oe/construction_standards.html. Or by contacting the Saddle Creek Community Services District.

8-1.01 AGENCY FURNISHED MATERIALS

Attention is directed to Section 6-1.02, "Department Acceptance," of the Standard Specifications and these special provisions.

The following materials MAY be furnished to the Contractor, at the discretion of the Cortina Community Services District:

NONE

8-2.01 PORTLAND CEMENT CONCRETE

Portland cement concrete shall conform to the provisions in Section 90, "Concrete," of the Standard Specifications and these special provisions.

References to Section 90-1.02, "Materials," of the Standard Specifications shall mean Section 90-1.02B, "Cementitious Materials," of the Standard Specifications.

90-1.02 MATERIALS

Unless otherwise specified, cementitious material shall be either a combination of Type II or Type V Portland cement and a supplementary cementitious material, or a blended cement.

Cementitious materials used in cast-in-place concrete for exposed surfaces of like elements of a structure shall be from the same sources and of the same proportions.

Cementitious materials shall be protected from moisture until used. Sacked cementitious materials shall be

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piled to permit access for tallying, inspecting, and identifying each shipment.

Facilities shall be provided to ensure that cementitious materials meeting this Section 90-1.02B are kept separate from other cementitious materials. Sampling cementitious materials shall be in conformance with California Test 125.

The Contractor shall furnish a Certificate of Compliance for cementitious materials in conformance with the provisions in Section 6-2.03C, "Certificates of Compliance." The Certificate of Compliance shall indicate the source by name and location (including country, state, and city). If cementitious material is delivered directly to the job site, the Certificate of Compliance shall be signed by the cementitious material supplier. If the cementitious material is used in ready-mixed concrete or in precast concrete products purchased as such by the Contractor, the Certificate of Compliance shall be signed by the manufacturer of the concrete or product.

90-1.02A General

Portland cement shall conform to the requirements in ASTM Designation: C 150 except the C_3S content of Type II cement shall not exceed 65 percent.

Blended cement shall conform to the requirements for Portland Blast-Furnace Slag Cement, Type IS (MS) or Portland-Pozzolan Cement, Type IP (MS) in AASHTO Designation: M 240 and shall be comprised of an intimate and uniform blend of Type II or Type V cement and supplementary cementitious material in an amount conforming to the requirements in Section 90-2.02B, "Cementitious Material."

In addition, blended cement, Type II Portland cement, and Type V Portland cement shall conform to the following requirements:

- A. The cement shall not contain more than 0.60-percent by mass of alkalis, calculated as the percentage of Na_2O plus 0.658 times the percentage of K_2O , when determined by methods as required in AASHTO Designation: T 105; and
- B. The autoclave expansion shall not exceed 0.50-percent

Type III Portland cement shall be used only as specified in the special provisions or with the approval of the Engineer. Type III Portland cement shall conform to the additional requirements listed above for Type II Portland cement.

8-2.02 ASPHALTS

SECTION 92 ASPHALT BINDERS

92-1.01 DESCRIPTION

Asphalt is refined petroleum or a mixture of refined liquid asphalt and refined solid asphalt that are prepared from crude petroleum. Asphalt is:

1. Free from residues caused by the artificial distillation of coal, coal tar, or paraffin
2. Free from water
3. Homogeneous

92-1.02 MATERIALS

GENERAL

Furnish asphalt under the Department's "Certification Program for Suppliers of Asphalt." The Department maintains the program requirements, procedures, and a list of approved suppliers at:

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<http://www.dot.ca.gov/hq/esc/Translab/fpm/fpmcoc.htm>

Transport, store, use, and dispose of asphalt safely.

Prevent the formation of carbonized particles caused by overheating asphalt during manufacturing or construction.

GRADES

Performance graded (PG) asphalt binder is: PG 64-10

Performance Graded Asphalt Binder

Property	AASHTO Test Method	Specification				
		Grade				
		PG 58-22 ^a	PG 64-10	PG 64-16	PG 64-28	PG 70-10
Original Binder						
Flash Point, Minimum °C	T 48	230	230	230	230	230
Solubility, Minimum % ^b	T 44	99	99	99	99	99
Viscosity at 135°C, ^c Maximum, Pa·s	T 316	3.0	3.0	3.0	3.0	3.0
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 1.00	64 1.00	64 1.00	64 1.00	70 1.00
RTFO Test, ^e Mass Loss, Maximum, %	T 240	1.00	1.00	1.00	1.00	1.00
RTFO Test Aged Binder						
Dynamic Shear, Test Temp. at 10 rad/s, °C Minimum G*/sin(delta), kPa	T 315	58 2.20	64 2.20	64 2.20	64 2.20	70 2.20
Ductility at 25°C Minimum, cm	T 51	75	75	75	75	75
PAV ^f Aging, Temperature, °C	R 28	100	100	100	100	110
RTFO Test and PAV Aged Binder						
Dynamic Shear, Test Temp. at 10 rad/s, °C Maximum G*/sin(delta), kPa	T 315	22 ^d 5000	31 ^d 5000	28 ^d 5000	22 ^d 5000	34 ^d 5000
Creep Stiffness, Test Temperature, °C Maximum S-value, Mpa Minimum M-value	T 313	-12 300 0.300	0 300 0.300	-6 300 0.300	-18 300 0.300	0 300 0.300

Notes:

- Use as asphalt rubber base stock for high mountain and high desert area.
- The Engineer waives this specification if the supplier is a Quality Supplier as defined by the Department's "Certification Program for Suppliers of Asphalt."

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- c. The Engineer waives this specification if the supplier certifies the asphalt binder can be adequately pumped and mixed at temperatures meeting applicable safety standards.
- d. Test the sample at 3°C higher if it fails at the specified test temperature. $G^*\sin(\delta)$ remains 5000 kPa maximum.
- e. "RTFO Test" means the asphaltic residue obtained using the Rolling Thin Film Oven Test, AASHTO Test Method T 240 or ASTM Designation: D 2872. The residue from mass change determination may be used for other tests.
- f. "PAV" means Pressurized Aging Vessel.

SAMPLING

Provide a sampling device in the asphalt feed line connecting the plant storage tanks to the asphalt weighing system or spray bar. Make the sampling device accessible between 24 and 30 inches above the platform. Provide a receptacle for flushing the sampling device.

Include with the sampling device a valve:

- 1. Between 1/2 and 3/4 inch in diameter
- 2. Manufactured in a manner that a one-quart sample may be taken slowly at any time during plant operations
- 3. Maintained in good condition

Replace failed valves.

In the Engineer's presence, take 2 one-quart samples per operating day. Provide round, friction top, one-quart containers for storing samples.

SECTION 9. (BLANK)

SECTION 10. CONSTRUCTION DETAILS

10-1.01 GENERAL

The Contractor's attention is directed to Section 5-1.36, "Property and Facility Preservation," of the Standard Specifications and these Special Provisions.

The Contractor will be required to work around public utility facilities and other improvements that are to remain in place within the construction area or that are to be relocated and relocation operations have not been completed, and in accordance with the provisions of Sections 5-1.36 and 7-1.02 of the Standard Specifications, he will be liable to owners of such facilities and improvements for any damage or interference with service resulting from his/her operations. The Contractor shall ascertain the exact locations of underground facilities and improvements within the construction area before using equipment that may damage such facilities or interfere with the services. Other forces may be engaged in moving or removing utility facilities or other improvements or maintaining services of utilities and the Contractor shall cooperate with such forces and conduct his/her operations in such a manner as to avoid any unnecessary delay or hindrance to the work being performed by such other forces.

The Contractor is required to notify all property owners, businesses, residences, etc. in letter form in both

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English and Spanish of the construction dates and times, at least 5 days prior to the beginning of work. This public notification must be submitted to the District and Engineer for review and approval prior to distribution. A copy of this notification letter must also be sent to the District Engineer. Contractor shall also post "Temporary No Parking" signs, a minimum of 72 hours prior to the commencing removals, cold milling, and paving operations of the street adjacent to their property. The notification shall be by posting visible signs at the edge of the curbs and gutters. The signs which will be posted must be on their own lath or attached to delineator cones, or pylons, and not stapled or nailed to any tree, utility pole or street signs. Trees must be protected from being scarred or broken during construction and must be repaired or replaced at Contractor's expense if damage is done.

In the event that vehicles are on the street at the time construction is to begin, the contractor shall take appropriate action to notify the owner/s of said vehicle to have it moved. If this is not possible, or the vehicle is inoperable and the owner is not capable of moving the vehicle, the contractor shall inform the Project Engineer, who will notify the County Sheriff's Office to have the vehicle towed at the owner's expense. Note: The above action may take place only if the "Temporary No Parking" signs have been in place, and placement has been verified by the Project Engineer, for the required 48 hour time period. Removal of said signs by the property owners or vandals will not constitute Non-compliance with this section.

The Contractor will be held responsible for any damage he may do to existing installations that are to remain in place.

The Contractor shall ensure that all striping and road markings are repainted as specified on the PLANS.

All property to remain shall be properly protected from injury or damage. Should any such property be damaged, it shall be repaired and/or replaced with material, fixtures, or equipment of the same kind, quality and size or better.

Full compensation for performing all of the work required under these Special Provisions shall be considered as included in the prices paid for the various Contract items of work involved and no separate payment will be made therefore.

10-1.02 ORDER OF WORK

Order of work shall conform to the provisions in Section 5, "Control of Work," of the Standard Specifications and these special provisions.

The Contractor shall phase the work according to the following:

Reddington Ranch and Wildwood Estates Subdivisions:

- 1) Crack Routing and Sealing
- 2) Microsurfacing
- 3) Traffic Striping and Markers

Full compensation for conforming to those requirements will be considered as included in the prices paid for the various contract items of work and no separate payment will be made therefore.

10-1.03 MOBILIZATION/DE-MOBILIZATION

The scope of the work for Mobilization shall include moving onto the site of all equipment; and the furnishing and erecting of plants, temporary buildings, and other construction facilities; all as required for the proper performance and completion of the Work. Mobilization shall include, but not be limited to, the following principal items:

1. Moving on to the site of all Contractor's equipment required for first month's operations.
2. Installing temporary construction power, wiring, and lighting facilities per Section entitled "Temporary Utilities."
3. Establishing fire protection system per Section entitled "Temporary Utilities."
4. Developing and installing construction water supply per Section entitled "Temporary Utilities."
5. Providing on-site sanitary facilities and potable water facilities as specified per Section entitled "Temporary Utilities."
6. Furnishing, installing, and maintaining all storage buildings or sheds required for temporary storage of products, equipment, or materials that have not yet been installed in the Work. All such storage shall meet manufacturer's specified storage requirements, and the specific provisions of the specifications, including temperature and humidity control, if recommended by the manufacturer, and for all security per Section entitled "Materials and Equipment," and Section entitled "Delivery, Storage, and Handling," as applicable.
7. Arranging for and erection of Contractor's work and storage yard per Section entitled "Site Access and Parking."
8. Obtaining and paying for all required permits.
9. Posting all OSHA required notices and establishment of safety programs.
10. Coordination with utility agencies.
11. Have the Contractor's superintendent at the job site full-time.
12. Submittal of required Construction Schedule as specified in Section entitled "Contractor Submittals."

In addition to the requirements specified above, all submittals shall conform to the applicable requirements of Section entitled "Contractor Submittals."

De-mobilization shall consist of the completion of all final construction and administration work required to secure the project for termination and acceptance by the Engineer, including but not limited to the following:

1. Removal of all temporary facilities, construction office, temporary utilities, plant, equipment, and similar from project limits and adjacent property, as required and as directed by the Engineer.
2. Completion of record drawings (as-builts), to the satisfaction of the Engineer.
3. Completion of the requirements of permits issued by other agencies.
4. Submission of signed 1-year material and workmanship guarantee.
5. Satisfactory completion of all other contractually and legally required construction and administrative items of work.

De-mobilization shall include the satisfactory completion of all items of work, but shall not be constructed as being a separate payment for work that is paid under separate contract items. The contract item for De-Mobilization is intended for proper close-out activities.

Measurement for payment for Mobilization/De-mobilization will be based upon completion of such work as a lump sum pay item, and shall require completion of all of the listed items in this Section.

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Payment for Mobilization/De-mobilization will be made at the lump sum allowance named in the Bid Sheets, which price shall constitute full compensation for all such work.

Payment for Mobilization will be made in the form of a single, lump sum equal to 50% of the contract lump sum price for Mobilization/De-mobilization, no part of which will be approved for payment under the Contract until all mobilization items listed herein have been completed as specified.

Payment for De-mobilization will be made in the form of a single, lump sum equal to 50% of the contract lump sum price for Mobilization/De-mobilization, no part of which will be approved for payment under the Contract until all de-mobilization items listed herein have been completed as specified. Payment for De-Mobilization will be included in the final pay estimate and payment.

10-1.04 NOT USED

10-1.05 CONTRACTOR SUBMITTALS

GENERAL

Wherever submittals are required hereunder, all such submittals by the Contractor shall be submitted to the Engineer through the Resident Project Representative for recording and forwarding to the Engineer. A Submittal is defined as any drawing, calculation, specification, product data, samples, manuals, requests for substitutes, spare parts, photographs, survey data, traffic control plans, record drawings, bonds, or similar items required to be submitted to the District or the Engineer under the terms of the contract.

Submittals Required Within 7 Days After Notice to Proceed: Within 7 days after the date of commencement as stated in the Notice to Proceed, the Contractor shall submit the following items to the Engineer for review:

1. A Preliminary Construction Schedule indicating the starting and completion dates of the various stages of the Work, and in accordance the Contract Documents.
2. A preliminary schedule of Shop Drawing and Sample submittals.
3. A list of all permits and licenses the Contractor shall be obtained indicating the agency required to grant the permit and the expected date of submittal for the permit and required date for receipt of the permit.

Submittals of Substitutes Required Prior to Award As provided under Section 3400 of the California Public Contracts Code, the Contractor shall, within 10 days prior to award of the contract, submit to the Engineer all proposed Substitutes or "Or Equal" products for the Engineer's review and approval. All such submittals shall be in conformance with the requirements of this Section.

The Contractor hereby agrees that failure to submit alternative product requests within the stipulated time period shall act as a waiver of any future rights to offer such substitutes, and the Contractor hereby agrees to provide one of the specific products called for in the Contract Documents.

CONTRACTOR'S SCHEDULE

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Time of Submittals: Within 7 days of the commencement date stated in the Notice to Proceed, the Contractor shall submit for acceptance by the Engineer, a Preliminary Construction Schedule for the Work, showing its general plan for orderly completion of the Work and showing in detail its planned mobilization of equipment, sequence of early operations, and timing of procurement of materials and equipment. The Preliminary Construction Schedule produced and submitted shall indicate a project completion date on or before the contract completion date. The Engineer within 7 days after receipt of the Preliminary Construction Schedule, shall meet with a representative of the Contractor to review the preliminary plan and construction schedule.

Within 7 days after the conclusion of the Engineer's review period, the Contractor shall revise the Preliminary Construction Schedule as required, and resubmit to the Engineer for review. The Preliminary Construction Schedule will be revised and/or approved or rejected by the Engineer within 7 calendar days after receipt. Said schedule, when accepted by the Engineer shall constitute the Initial Construction Schedule until later revised schedules are submitted due to delays beyond the control and without the fault or negligence of the Contractor.

Acceptance: When the Initial Construction Schedule has been accepted, the Contractor shall submit to the Engineer 4 copies of the accepted schedule.

Schedule Updates with Progress Payment Applications: The Contractor shall submit updated construction schedules with each payment application.

Additional Revised Construction Schedules: The Contractor, if requested by the Engineer, shall provide a Revised Construction Schedule if, at any time, the Engineer considers the completion date to be in jeopardy because of any portion of the work falling behind schedule. The Revised Construction Schedule shall show how the Contractor intends to accomplish the Work to meet the completion date. The form and method employed by the Contractor shall be the same as required for the Initial Construction Schedule.

Construction Schedule Revisions: The Contractor shall modify any portions of the construction schedule that becomes unfeasible because of portions of the Work falling behind schedule, or for any other valid reason. Any portion of the work that cannot be completed by its originally- scheduled completion date shall be deemed to be behind schedule.

PROPOSED SUBSTITUTES OR “OR-EQUAL” ITEMS

For convenience in designation in the Contract Documents, any material, product, or equipment to be incorporated in the Work may be designated under a brand or trade name or the name of a manufacturer and its catalog information. The use of any substitute material, product, or equipment which is equal in quality and utility and possesses the required characteristics for the purpose intended will be permitted, subject to the following requirements:

1. The burden of proof as to the quality and utility of any such substitute material, product, or equipment shall be upon the Contractor.
2. The Engineer will be the sole judge as to the quality and utility of any such substitute material, product, or equipment and its decision shall be final.

Wherever in the Contract Documents the name or the name and address of a manufacturer or supplier is given for a material, product, or equipment, or if any other source of a material, product, or equipment is indicated therefore, such information is given for the convenience of the Contractor only, and no limit, restriction, or direction is indicated or intended thereby, nor is the accuracy or reliability of such information guaranteed. It shall be the responsibility of the Contractor to determine the accurate identity and location of any such

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manufacturer, supplier, or other source of any material, product, or equipment called for in the Contract Documents.

The Contractor may offer any material, product, or equipment that it considers equal to those specified. Unless otherwise provided by law or authorized in writing by the Engineer, the substantiation of any proposed substitute or "or equal" material, product, or equipment must be submitted prior to award of the contract. The Contractor, at its sole expense, shall furnish data concerning items it has offered as substitute or "or equal" to those specified. The Contractor shall provide the data required by the Engineer to determine that the quality, strength, physical, chemical, or other characteristics, including durability, finish, efficiency, dimensions, service, and suitability are such that the substitute or "or equal" item will fulfill its intended function.

The Contractor's attention is further directed to the requirement that its failure to submit data substantiating a request for a substitution of an "or equal" item during the time between the opening of bids and the date of award shall be deemed to mean that the Contractor intends to furnish one of the specific brand or trade-named material, product, or equipment specified in the Contract Documents and the Contractor does hereby waive all rights to offer or use substitute materials, products, or equipment in each such case. Wherever a proposed substitute material, product, or equipment has not been submitted within the time specified above, or wherever the submission of a proposed substitute material, product, or equipment fails to meet the requirements of the Specifications and an acceptable resubmittal is not received by the Engineer within said specified time period, the Contractor shall furnish only one of the materials, products, or equipment originally-named in the Contract Documents. Approval by the Engineer of a substitute item proposed by the Contractor shall not relieve Contractor of the responsibility for full compliance with the Contract Documents and for adequacy of the substituted item. The Contractor shall also be responsible for resultant changes and all additional costs which the substitution requires in its work, the work of its subcontractors and of other contractors and shall effect such changes without cost to District.

10-1.06 MATERIALS AND EQUIPMENT

The word "Products," as used herein, is defined to include purchased items for incorporation into the Work, regardless of whether specifically purchased for project or taken from Contractor's stock of previously purchased products. The word "Materials," is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form units of work. The word "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, etc.). Definitions in this paragraph are not intended to negate the meaning of other terms used in Contract Documents, including "specialties," "systems," "structure," "finishes," "accessories," "furnishings," "special construction," and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

Source Limitations: To the greatest extent possible for each unit of work, the Contractor shall provide products, materials, or equipment of a singular generic kind from a single source.

Compatibility of Options: Where more than one choice is available as options for Contractor's selection of a product, material, or equipment, the Contractor shall select an option which is compatible with other products, materials, or equipment already selected. Compatibility is a basic general requirement of product/material selections.

All equipment designated to be installed in the Work, whether temporarily stored at the site or installed in place, shall be serviced on a regularly scheduled basis, and a written log of services shall be maintained and submitted as a record document to the Engineer.

Full compensation for Materials and Equipment shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefore.

10-1.07 DELIVERY, STORAGE, AND HANDLING

The Contractor shall confine all operations (including storage of materials) on District premises to areas authorized or approved by the District. The Contractor shall hold and save the District, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.

Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the District and shall be built with labor and materials furnished by the Contractor without expense to the District. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the Work. With the written consent of the Engineer, the buildings and utilities may be abandoned and need not be removed.

The Contractor shall make its own arrangements for any necessary off-site storage or shop areas necessary for the proper execution of the Work.

The Contractor shall deliver, handle, and store products in accordance with manufacturer's written recommendations and by methods and means that will prevent damage, deterioration, and loss including theft. Delivery schedules shall be controlled to minimize long-term storage of products at site and overcrowding of construction spaces. In particular, the Contractor shall provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other sources of loss.

Products shall be transported by methods to avoid product damage and shall be delivered in undamaged condition in manufacturer's dry, unopened containers or packaging.

The Contractor shall provide equipment and personnel to handle products, materials, and equipment including those provided by District by methods to prevent soiling and damage.

The Contractor shall provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.

Products shall be stored in accordance with manufacturer's written instructions, with seals and labels intact and legible. Sensitive products shall be stored in weather-tight enclosures and temperature and humidity ranges shall be maintained within those required by the manufacturer's written instructions.

Storage shall be arranged to provide access for inspection. The Contractor shall periodically inspect to assure products are undamaged and are maintained under required conditions.

Products subject to discoloration or deterioration from exposure to the elements shall be covered with impervious sheet material. Ventilation shall be provided to avoid condensation.

Loose granular materials shall be stored on clean, solid surfaces such as pavement, or on rigid sheet materials to prevent mixing with foreign matter.

Surface drainage shall be provided to prevent erosion and ponding of water.

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Full compensation for Delivery, Storage, and Handling shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefore.

10-1.08 COOPERATION

It is anticipated that work by another various utility owners will need to be conducted in coordination with the construction of the designation improvement to adjust existing manholes and valve covers to new grades. The contractor shall furnish access and coordinate construction operations to accommodate this work.

It shall be the responsibility of the contractor to work with the local utility companies to locate all underground utility service lines within the project limits prior to any excavation work. The Contractors attention is directed to the Section entitled "Compliance With One Call Underground Service Alert," elsewhere in these Specifications

[Underground Service Alert-Northern California \(USA\)](#)
[Telephone: 1 \(800\) 422-4133 or 1 \(800\) 227-2600](#)

Comply with Section 5-1.20, "Coordination with Other Entities," of the Standard Specifications.

Full compensation for Cooperation shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefore.

10-1.09 PROGRESS SCHEDULE

Progress schedules are required for this contract and shall be submitted in conformance with the provisions in Section 8-1.02, "Schedule," of the Standard Specifications and these special provisions, unless otherwise authorized in writing by the Engineer.

The Contractor shall submit a staging plan and progress schedule describing how he will stage and schedule the project and control traffic through the work location within ten (10) days of receiving Notice of Award of the Contract, to the Engineer for approval. It is understood that the schedule submitted by the Contractor shall meet the specifications and that the work shall be executed in the sequence indicated in the approved baseline schedule and subsequent approved updates and revisions. The Contractor shall be responsible for assuring that all work sequences are logical and the network shows a coordinated plan for complete performance of the work. Failure of the Contractor to include any element of work required for the performance of the contract in the network shall not relieve the Contractor from completing all work within the time specified for completion of the contract. In the event the Contractor fails to define any element of work, activity or logic, when the omission or error is discovered by either the Contractor or the Engineer, it shall be corrected by the Contractor at the next scheduled update or revision.

As a minimum, the plan shall identify all major tasks necessary to complete the work, shall indicate when each task starts and the number of working days required to complete tasks necessary to complete the work, and shall indicate the time relationship among the activities and shall indicate the amount of each contract item that will be completed after each 10 percent increment of contract time has elapsed.

When performance falls more than 10 percent behind the approved schedule, the Contractor shall, within 5 days, submit to the Engineer for approval a revised plan indicating how the remaining work will be completed within the remaining time.

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The work shall be performed in accordance with the Contractor's detailed plan. Non-conflicting work in subsequent stages may proceed concurrently in preceding stages, provided satisfactory progress is maintained in said preceding stages of construction.

The contractor shall allow 15 days for the Engineer to review and approve or return for correction or clarification any schedule submitted to the Engineer for approval

Full compensation for furnishing and implementation of the Contractors Progress Schedule shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefore.

10-1.10 TEMPORARY UTILITIES

It shall be the Contractor's responsibility to provide equipment that is adequate for the performance of the Work under this Contract within the time specified. All equipment shall be kept in satisfactory operating condition, shall be capable of safely and efficiently performing required Work, and shall be subject to inspection and approval by the District's representative at any time within the duration of the Contract. All work hereunder shall conform to the applicable requirements of Cal-OSHA Construction Safety Orders.

The Contractor shall provide all necessary temporary power required for its operations under the Contract, and shall provide and maintain all temporary power lines required to perform the Work in a safe and satisfactory manner.

All Work conducted at night or under conditions of deficient daylight when authorized by the Engineer, shall be suitably lighted to insure proper Work and to afford adequate facilities for inspection and safe working conditions

All temporary connections for electricity shall be subject to approval of the Engineer and the power company representative, and shall be removed in like manner at the Contractor's expense prior to final acceptance of the Work by the District.

Unless otherwise permitted by the Engineer, circuits separate from lighting circuits shall be used for all power purposes.

All wiring for temporary electric light and power shall be properly installed and maintained and shall be securely fastened in place.

Contractor shall be responsible for providing construction water. If the Contractor intends to use water from the Water Provider's fire hydrants, the Contractor will be required to apply for a water construction meter and pay for all charges required by the Water Provider. The Contractor shall provide all facilities necessary to convey the water from the water source to the points of use in accordance with the requirements of the Contract Documents.

The Contractor will be responsible for all water charges from the Water Provider's fire hydrants during construction.

The Contractor shall not make connection to, or draw water from, any fire hydrant or pipeline without first obtaining permission of the Water Provider for the use of said fire hydrant or pipeline. For each such connection made, the Contractor shall first attach to the fire hydrant or pipeline a valve and a meter of a size

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and type acceptable to the Water Provider. The Contractor shall contact the Water Provider for specific requirements for water usage and charges.

Contractor shall be solely responsible for the adequate functioning of its water supply system and shall be solely liable for any claims arising from the use of same, including discharge or waste of water therefrom.

Before final acceptance of the Work on the project, all temporary connections and piping installed by the Contractor shall be entirely removed, and all affected improvements shall be restored to their original condition, or better, to the satisfaction of Engineer, the District, and/or other agency owning the affected utility.

Fixed or portable chemical toilets shall be provided wherever needed for the use of employees.

The Contractor shall establish a regular daily collection of all sanitary and organic wastes. All wastes and refuse from sanitary facilities provided by the Contractor or organic material wastes from any other source related to the Contractor's operations shall be disposed of away from the site in a manner satisfactory to the Engineer and in accordance with all laws and regulations pertaining thereto.

Full compensation for providing, maintaining, and removing Temporary Utilities shall be considered as included in the contract price paid for under the lump sum Contract bid item for Mobilization/De-Mobilization, and no separate payment will be made therefore.

10-1.11 NOT USED

10-1.12 DUST CONTROL

Dust control shall conform to the provisions of Section 10-5, "Dust Control", of the Standard Specifications and these special Provisions.

Full compensation for dust control shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefore.

10-1.13 SITE ACCESS AND PARKING

The Contractor shall take all necessary precautions for the protection of the Work and the safety of the public. All barricades and obstructions shall be illuminated at night, and all lights shall be kept burning from sunset until sunrise. The Contractor shall station such guards or flaggers and shall conform to such special safety regulations relating to traffic control as may be required by the public authorities within their respective jurisdictions. All signs, signals, and barricades shall conform to the requirements of Article 11 of Cal-OSHA Construction Safety Orders.

The Contractor shall make its own investigation of the condition of available public and private roads and of clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress to and from the site of the Work. It shall be the Contractor's responsibility to construct and maintain any access or haul roads required for its construction operations.

Nothing herein shall be construed to entitle the Contractor to the exclusive use of any public street, alley, way, or parking area during the performance of the Work hereunder, and it shall so conduct its operations so as not

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to interfere unnecessarily with the authorized work of the District, utility companies, or other agencies in such streets, alleys, ways, or parking areas.

No street shall be closed to the public without first obtaining the permission of the Engineer, the District, and other proper governmental authority, where applicable. Where excavation is being performed in primary streets or highways, one lane of traffic shall be kept open in each direction at all times unless otherwise provided in the Contract Documents or under the terms of the permits issued by the District, County, State, or other public agencies, as required.

Toe boards shall be provided to restrict movement of excavated material if required by the Engineer, the District, or other Agency having jurisdiction over the affected street or highway.

Fire hydrants on or adjacent to the Work shall be kept accessible to firefighting equipment at all times.

Temporary provisions shall be made by the Contractor to assure the use of sidewalks and the proper functioning of all gutters, sewer inlets, and other drainage facilities.

Wherever necessary or required for the convenience of the public or individual residents or business places at street or highway crossings, private driveways, or elsewhere, the Contractor shall provide suitable temporary bridges or steel plates over unfilled excavations, except in such cases as the Contractor shall secure the written consent of the individuals or authorities concerned to omit such temporary bridges or steel plates, which written consent shall be delivered to the Engineer prior to beginning the excavation. All such bridges or steel plates shall be maintained in service until access is provided across the backfilled excavation.

For the protection of traffic in public or private streets and ways, the Contractor shall provide, place, and maintain all necessary barricades, traffic cones, warning signs, lights, and other safety devices in accordance with the requirements of the current edition of California Manual of Uniform Traffic Control Devices as published by State of California, Department of Transportation. Traffic control shall be subject to the requirements of Article 11 of Cal-OSHA Construction Safety Orders and these Contract Documents.

If closure of any street is required during construction, a formal application for a street closure shall be made to the District at least 30 days prior to the required street closure in order for the District to determine the necessary signing and detour requirements to be provided by the Contractor.

Full compensation for site access and parking shall be considered as included in the contract price paid for under the lump sum Contract bid item for Mobilization/De-Mobilization, and no separate payment will be made therefore.

10-1.14 TRAFFIC CONTROL PLAN/CONSTR AREA SIGNS

Please note that all Flagging Costs for Traffic Control will be paid solely by the Contractor and full compensation for performing this work will be paid under the lump sum bid item for TRAFFIC CONTROL PLAN AND IMPLEMENTATION and no additional compensation will be allowed therefore.

CONSTRUCTION AREA TRAFFIC CONTROL DEVICES

Flagging, signs, and temporary traffic control devices furnished, installed, maintained, and removed when no longer required shall conform to the provisions of the latest edition of the California Manual of Uniform Traffic Control Devices (CAMUTCD) and these special provisions.

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All traffic control devices including cones, barricades, signs, etc. shall be new or unblemished.

Category 1 temporary traffic control devices are defined as small and lightweight (less than 45 kg) devices. These devices shall be certified as crashworthy by crash testing, crash testing of similar devices, or years of demonstrable safe performance. Category 1 temporary traffic control devices include traffic cones, plastic drums, portable delineators, and channelizers.

If requested by the Engineer, the Contractor shall provide written self-certification for crashworthiness of Category 1 temporary traffic control devices at least 5 days before beginning any work using the devices or within 2 days after the request if the devices are already in use. Self-certification shall be provided by the manufacturer or Contractor and shall include the following:

- A. Date,
- B. Federal Aid number (if applicable),
- C. Contract number, district, county, route and kilometer post of project limits,
- D. Company name of certifying vendor, street address, city, state and zip code,
- E. Printed name, signature and title of certifying person; and
- F. Category 1 temporary traffic control devices that will be used on the project.

The Contractor may obtain a standard form for self-certification from the Engineer.

Category 2 temporary traffic control devices are defined as small and lightweight (less than 45 kg) devices that are not expected to produce significant vehicular velocity change, but may cause potential harm to impacting vehicles. Category 2 temporary traffic control devices include barricades and portable sign supports.

Category 2 temporary traffic control devices shall be on the Federal Highway Administration's (FHWA) list of Acceptable Crashworthy Category 2 Hardware for Work Zones. This list is maintained by FHWA and can be located at:

http://safety.fhwa.dot.gov/roadway_dept/road硬件/listing.cfm?code=workzone

The Department also maintains this list at:

<http://www.dot.ca.gov/hq/traffops/signtech/signdel/pdf/Category2.pdf>

Category 2 temporary traffic control devices that have not received FHWA acceptance shall not be used. Category 2 temporary traffic control devices in use that have received FHWA acceptance shall be labeled with the FHWA acceptance letter number and the name of the manufacturer. The label shall be readable and permanently affixed by the manufacturer. Category 2 temporary traffic control devices without a label shall not be used.

If requested by the Engineer, the Contractor shall provide a written list of Category 2 temporary traffic control devices to be used on the project at least 5 days before beginning any work using the devices or within 2 days after the request if the devices are already in use.

Full compensation for providing self-certification for crashworthiness of Category 1 temporary traffic control devices and for providing a list of Category 2 temporary traffic control devices used on the project shall be considered as included in the contract price paid for Traffic Control/Traffic Control Plan/Construction Area Signs, and no additional compensation will be allowed therefore.

CONSTRUCTION AREA SIGNS

Construction area signs for temporary traffic control shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions of California Manual of Uniform Traffic Control Devices (CAMUTCD) and these special provisions.

All construction area signs shall be new or unblemished.

One C18 sign and One C13 sign shall be posted on each approach/departure from the construction work area. Locations of the signs shall be approved by the Engineer.

Signs may be ported on temporary post supported by cross braces, rather than by digging holes for posts. Where such cross braces are used, no braces shall extend into the traveled way or a sidewalk.

Unless otherwise shown on the plans or specified in these special provisions, the color of construction area warning and guide signs shall have black legend and border on orange background, except W10-1 or W47(CA) (Highway-Rail Grade Crossing Advance Warning) sign shall have black legend and border on yellow background.

Orange background on construction area signs shall be fluorescent orange.

Repair to construction area sign panels will not be allowed, except when approved by the Engineer. At nighttime under vehicular headlight illumination, sign panels that exhibit irregular luminance, shadowing or dark blotches shall be immediately replaced at the Contractor's expense.

The Contractor shall notify the appropriate regional notification center for operations of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to commencing any excavation for construction area sign posts. The regional notification centers include but are not limited to the following:

Underground Service Alert-
Northern California (USA)

Telephone: 1 (800) 227-2600

All excavation required to install construction area signs shall be performed by the hand methods without the use of power equipment; except that power equipment may be used if it is determined there are no utility facilities in the area of the proposed post holes.

The Contractor shall maintain accurate information on construction area signs. Signs that are no longer required shall be immediately covered or removed. Signs that convey inaccurate information shall be immediately replaced or the information shall be corrected. Covers shall be replaced when they no longer cover the signs properly. The Contractor shall immediately restore to the original position and location any sign that is displaced or overturned, from any cause, during the progress of work.

Construction area signs shown on the plans, unless otherwise specified in the special provisions, will be paid for on a lump sum basis, which lump sum price shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing construction area signs required for the direction of public traffic through or around the work and for erecting or placing, maintaining (including covering and uncovering as needed) and, when no longer required, removing construction area signs at locations shown on the plans.

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Full compensation for furnishing, erecting, maintaining and removing any additional construction area signs the Contractor may deem necessary will be considered as included in the lump sum price paid for Traffic Control/Traffic Control Plan/Construction Area Signs and no additional compensation will be allowed therefore.

MAINTAINING TRAFFIC

Attention is directed to Sections 7-1.03, "Public Convenience," 7-1.04, "Public Safety," and Section 12, "Temporary Traffic Control," of the Standard Specifications and to the Section entitled, "Public Safety," elsewhere in these special provisions, and these special provisions. Nothing in these special provisions shall be construed as relieving the Contractor from his responsibility as provided in said Section 7-1.04.

The Contractor will not be allowed to close streets. One lane of through traffic shall be maintained at all times with appropriate Signage, Personnel and safety equipment to safely direct traffic through the construction area, unless the contractor submits to the District Engineer a proposed detour plan.

Detour plan shall meet the criteria for detour plans as shown in the latest edition of the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Zones. The District Engineer, and the Director of Public Works; shall approve Detour Plan, copies shall be sent to the Sheriff's Department and Local Fire Agencies and Emergency Organizations, i.e. Hospitals and Ambulance services. Said Detour Plan shall clearly state the dates and times of closure. Closures shall only be allowed during working hours, and the roadway shall be made passable for passenger type vehicles at the close of the work each day.

The Contractor shall be responsible for all barricades, delineators, cones, reflective media, signs and other traffic control measures necessary for the safe control of traffic and protection of the work.

The Contractor shall notify in writing all residents, commercial establishments and others affected by the construction, 5 days prior to the beginning of construction. The public notice shall be submitted to the District and Engineer for review and approval prior to distribution.

The Contractor shall also place "TEMPORARY NO PARKING" signs, in the areas of construction a minimum of 48 hours prior to beginning work for, AC Paving, and Curb and Gutter Replacement, as necessary for striping and placement of signs.

The Contractor is responsible for the repair of any damage done by emergency or other vehicles, inadvertent or not.

The Contractor shall review with the District Engineer, Project Engineer and the Chief of Police, his/her proposed method of barricading and signing in the field and shall comply with any request they may make. Said review shall be at least 48 hours in advance of construction. Contractor shall also notify in writing the District Engineer, the County Fire Departments, and Sheriffs Department of his/her proposed construction schedule.

Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders including any section closed to public traffic.

The Contractor shall notify local authorities of the Contractor's intent to begin work at least 5 days before work is begun. The Contractor shall cooperate with local authorities relative to handling traffic through the area and shall make arrangements relative to keeping the working area clear of parked vehicles.

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Whenever work vehicles or equipment are parked on the shoulder within 1.8 m (6 ft) of a traffic lane, the shoulder area shall be closed with fluorescent orange traffic cones or portable delineators placed on a taper in advance of the parked vehicles or equipment and along the edge of the pavement at 7.5-meter (24-ft) intervals to a point not less than 7.5 m (24 ft) past the last vehicle or piece of equipment. A minimum of 9 traffic cones or portable delineators shall be used for the taper. A W20-1 (ROAD WORK AHEAD) or W21-5b (RIGHT/LEFT SHOULDER CLOSED AHEAD) or C24(CA) (SHOULDER WORK AHEAD) sign shall be mounted on a portable sign stand with flags. The sign shall be placed where designated by the Engineer. The sign shall be a minimum of 1200 mm x 1200 mm (48in x 48in) in size. The Contractor shall immediately restore to the original position and location a traffic cone or delineator that is displaced or overturned, during the progress of work.

The Contractor shall use new flashing barricades where work is to be delineated or protected during nights and weekends.

A minimum of one traffic lane, not less than **10 ft wide**, shall be open for use by public traffic in each direction of travel.

The contractor shall provide a traffic control plan for approval prior to beginning work on the project. Traffic control plans shall be specific to the project area, showing appropriate lane usage, turn pockets and side streets, and shall conform to the provisions of the CAMUTCD.

Full compensation for performing all of the work required under these Special Provisions shall be paid under the lump sum bid item for Traffic Control/Traffic Control Plan/Construction Area Signs and no additional compensation will be allowed therefore.

10-1.15 WATER POLLUTION CONTROL

GENERAL

Contractor shall be responsible for preparation and implementation of a BMP (Best Management Practices) List, subject to approval by the District Engineer. The list shall include practices to protect areas receiving storm water runoff from the project site or construction support facilities. The plan may utilize the practices recommended in the latest California Storm Water Best Management Practices Construction Handbook available at www.casqa.com.

SUBMITTALS

If you operate construction support facilities, protect storm water systems or receiving waters from the discharge of potential pollutants by using WPC Best Management Practices (BMPs).

Construction support facilities include:

1. Staging areas
2. Storage yards for equipment and materials
3. Mobile operations
4. Batch plants for PCC and HMA
5. Crushing plants for rock and aggregate
6. Other facilities installed for your convenience such as haul roads

IMPLEMENTATION REQUIREMENTS

BMP Implementation

Monitor the National Weather Service Forecast Office on a daily basis.

Whenever you or the Engineer identifies a deficiency in the implementation of the approved BMP list:

1. Correct the deficiency immediately, unless the Engineer agrees to a later date for making the correction
2. Correct the deficiency before precipitation occurs

If you fail to correct the deficiency by the agreed date or before the onset of precipitation, the Department may correct the deficiency and deduct the cost of correcting the deficiency from payment.

Continue BMP implementation during any temporary suspension of work activities.

Install BMP practices within 15 days or before predicted precipitation, whichever occurs first.

INSPECTION

The BMP Manager must prepare BMP status reports that include the following:

1. Location and quantity of installed BMP practices
2. Location and quantity of disturbed soil for the active or inactive areas

Within 24 hours of finishing the weekly inspection, the BMP Manager must submit:

1. Copy of the completed site inspection report
2. Copy of the BMP status report

PAYMENT

Full compensation for water pollution control shall be considered as included in the contract price paid for under the lump sum Contract bid item for Water Pollution Control, and no separate payment will be made therefore.

10-1.16 EXISTING HIGHWAY FACILITIES

The work performed in connection with various existing facilities shall conform to the provisions in Section 15, "Existing Facilities," of the Standard Specifications and these special provisions.

SAWCUTTING

Saw cutting of existing surface facilities and other facilities requiring saw cutting shall be cut in a neat line to a minimum depth of 0.25-foot with a power driven saw as needed or as described in the various sections of these Special Provisions.

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Full Compensation for saw cutting (regardless of the number of passes required) of existing asphalt concrete surface, concrete pavement or other facilities shall be considered as included in the contract prices paid for the various items of work involved which require saw cutting and no separate payment will be made therefore.

PROTECT MISCELLANEOUS FACILITIES

All existing facilities that are located outside of the limits of new construction, including adjacent facilities or facilities to be joined to, and all existing facilities called out to "Protect" on the construction drawings, shall be protected in place as indicated. All existing miscellaneous facilities shall be protected in place or relocated to nearby locations appropriate for accommodating pedestrian traffic through the newly constructed facilities. All buildings and store fronts, including miscellaneous facilities that are a part of the store frontages, shall be protected in place unless otherwise noted on the construction drawings. All existing trees shall be protected in place, unless otherwise noted on the plans.

Full compensation for furnishing all labor, materials, tools equipment, and incidentals required to protect miscellaneous facilities shall be considered as included in the contract price paid per the various items of work involved and no additional compensation will be allowed therefore.

REMOVE MISCELLANEOUS FACILITIES

All existing facilities that are located within the limits of new construction and are called out to "Remove" on the construction drawings, or will require removal in order to install new improvements and is not designated for protection or relocation, shall be removed and disposed of by the contractor.

Full compensation for all work under this section shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefore.

10-1.17 PRESERVATION OF PROPERTY

Attention is directed to the provisions in Section 5-1.36, "Property and Facility Preservation," of the Standard Specifications and these special provisions.

PROTECTION

The Contractor shall protect all private and public property and shall replace, repair, or pay for any damage thereto.

NOTICE TO PROPERTY OWNERS AND TENANTS

The Contractor shall give a written notice to all property owners adjacent to and affected by his/her work at least five (5) working days in advance of beginning the work, indicating the work to be performed and the approximate length of time that the property owner or tenant will be affected by his/her operations.

ACCESS

Access shall be provided to all businesses and residences at all times. The Contractor shall conduct his/her operations so as to cause the least inconvenience to both vehicular and pedestrian access.

Existing trees, shrubs and other plants, that are not to be removed as shown on the plans or specified elsewhere in these special provisions, and are injured or damaged by reason of the Contractor's operations, shall be replaced by the Contractor. Damaged or injured plants shall be removed and disposed of.

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Replacement planting of injured or damaged trees, shrubs and other plants shall be completed not less than 20 working days prior to acceptance of the contract. Replacement plants shall be watered as necessary to maintain the plants in a healthy condition.

Full compensation for all work under this section shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefore.

10-1.18 UTILITIES

It shall be the obligation of the Contractor to notify the various utility companies at least three (3) days in advance of closing and/or tearing up of the street affecting said utility companies.

It shall be the obligation of the Contractor to immediately notify the affected utility company if relocation of any utilities will be required.

Refer to Section 5-1.36D, "Nonhighway Facilities," of the Standard Specifications and these special provisions (including Utilities) for utility coordination scheduling details.

Full compensation for providing utility notifications, potholing, and coordination shall be considered as included in the prices paid for the various items of work and no separate payment will be made therefore.

10-1.19 PEDESTRIAN ACCESS

Pedestrian access shall be maintained on all existing crosswalks and all existing wheelchair ramps during construction. If the Contractor's operations require the closure of one walkway, then another walkway shall be provided nearby, off the traveled roadway.

ACCESS

Access shall be provided to all businesses and residences whenever practicable. The Contractor shall conduct his/her operations so as to cause the least inconvenience to both vehicular and pedestrian access.

Full compensation for providing said pedestrian facilities shall be considered as included in the prices paid for the various Contract items of work involved and no separate payment will be made therefore.

10-1.20 MICRO-SURFACING, TYPE II

This item of work shall consist of furnishing and placing Micro-Surfacing, Type II to the existing asphalt surfaces as shown on the plans. Micro-Surfacing Type II shall conform to the Standard Specifications and these Technical Specifications, and as directed by the Engineer

This work shall consist of mixing polymer-modified asphalt emulsion, aggregate, mineral filler, set-control additives, and water and spreading the mixture on pavement where shown on the plans, as specified in these specifications and as directed by the Engineer.

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Material

Asphalt Emulsion – Polymer modified asphalt emulsion shall be designated as quick setting type PMCQS-1H grade conforming to the requirements of these specifications and Section 94, “Asphaltic Emulsions,” of the State Standard Specifications.

The polymer material shall be milled or blended into the asphalt or emulsifier solution prior to the emulsification process.

The minimum amount and type of polymer modifier shall be determined by the laboratory performing the mix design. The asphalt emulsion supplier shall certify that the emulsion contains a minimum of 3% polymer solids based on the mass of asphalt (asphalt residual) within the emulsion.

The polymer modified emulsion shall be a homogenous mixture throughout and shall show no separation after thorough mixing. The emulsion shall conform to the requirements as shown in the Table below:

Properties	Test Method	Requirements
Test on Emulsion		
Viscosity, SSF, @ 77 °F	AASHTO T-59	15 – 90 seconds
Sieve Test	AASHTO T-59	0.3% max.
Settlement, 5 days	AASHTO T-59	5% max.
Storage Stability, 1 Day	AASHTO T-59	1% max.
Residue by Low-Temperature Vacuum Distillation	ASTM D244	62% min.
Test on Residue from Evaporation Test (CTM 331):		
Penetration @ 77 °F, 100 g, 5 seconds	AASHTO T-49	40 – 80 dmm
Ring & Ball Softening Pont, °F	AASHTO T-53	135 min.
Kinematic Viscosity @ 275 °F	ASTM 2170	650cST/sec. min °F
Polymer Content (by weight)	CTM 401	3% min.

Each load of emulsified asphalt shall be accompanied with a certificate of analysis/compliance to assure that it is the approved mix design.

Aggregate – Aggregate shall be manufactured crushed stone such as granite, slag, limestone, chat or other high quality aggregate, or combination thereof. To assure the material is totally crushed, 100% of the parent aggregate shall be larger than the largest stone gradation to be used. The material shall be free from vegetable matter and other deleterious substances.

When tested, the aggregate shall conform to the following quality requirements:

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Properties	Test Method	Requirements Type II
Sand Equivalent	ASTM D2419	65 min.
Durability Index	CTM 229	65 min.
Abrasion Resistance – to be performed on the parent aggregate before crushing	ASTM C131	30% maximum (after 500 revolutions)

Prior to the addition of emulsions the aggregate shall conform to the requirement of this section. When tested in accordance to AASHTO T27 (ASTM C136) and AASHTO T11 (ASTM C117), the aggregate gradation (including mineral filler) shall be within the following bands:

Sieve Size	TYPE II Percent Passing	Stockpile Tolerance
3/8"	100	+/- 5%
No. 4	94 – 100	+/- 5%
No. 8	65 – 90	+/- 5%
No. 16	40 – 70	+/- 5%
No. 30	25 – 50	+/- 5%
No. 50	18 – 30	+/- 4%
No. 100	10 – 21	+/- 3%
No. 200	5 – 15	+/- 2%

After the target gradation has been submitted and identified in the mix design, the percent passing each sieve shall not vary by more than the stockpile tolerance and still remain within the gradation band during the application of micro-surfacing.

Mineral Filler – If require, mineral filler shall be any recognized brand of non-air entrained Portland Cement or hydrated lime that is free from lumps and meeting the requirements of ASTM D242. The type and amount of mineral filler needed shall be determined by the laboratory mix design and will be considered as part of the mineral gradation requirement.

Additives – Additives may be added to the emulsion mix or any of the component materials to provide the control of the quick-traffic properties. They must be included as part of the mix design and be compatible with the other component of the mix.

Water – Water shall be potable and shall be free of harmful soluble salts. Water should be of a quality such that the asphalt will not separate from the emulsion before the micro-surfacing is in place on the pavement.

Mix Design

Contractor shall submit a certified mix design identifying the specific type and source of materials to be used on the project. The mix design shall verify compatibility of the aggregate, emulsion, mineral filler, and other additives. Additionally, the mix design shall report test results showing compliance with related material specifications contained in these provisions.

The mix design shall use the same aggregate gradation as supplied by the Contractor on the project.

The test and mix design shall be performed by a laboratory capable of performing the International Slurry Seal Association (ISAA) tests. The laboratory shall certify, on the mix design, that it has had at least two years of experience in the design of micro-surfacing.

The mix design shall be performed and dated within 30 days prior to the application of the micro-surfacing.

After the mix design has been approved, no substitution or changes of materials shall be permitted, unless approved by the Engineer. If changes in materials are approved by the Engineer, a new mix design shall be performed by the Testing laboratory before the application of new material.

Required tests and values are as follows:

Test	ISSA Test Method	Requirements
Wet Cohesion		
@ 30 minutes min.	TB - 139	12 kg-cm min.
@ 60 minutes min.	TB - 139	20 kg-cm min.
Excess Asphalt by LWT Sand Adhesion	TB-109	50 grams/sq ft max.
Wet Stripping	TB-114	Pass (90% min.)
Wet Track Abrasion Loss - one hour soak - six-day soak	TB-100	50 grams/sq ft max. 75 grams/sq ft max.
Lateral - Displacement - Specific gravity (after 1,000 cycles of 125 lbs.	TB-147	5% max. 2.10 max.
Classification Compatibility	TB-144	11 grade points min. (AAA, BAA)
Mix Time @ 77 °F	TB-113	Controllable to 120 seconds min.

The laboratory report shall show the quantitative effects of moisture content on the unit weight of the aggregate (bulking effect). The report must clearly show the proportions of aggregate, mineral filler (min. and

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max.), water (min. and max.) additive(s) (usage), and asphalt emulsion based on the dry weight of the aggregate.

The percentages of each individual material required shall be shown in the laboratory report. Adjustments may be required during the construction based on field conditions. The Engineer shall give final approval for all such adjustments.

The Engineer shall approve the mix design and all micro-surface materials and methods prior to use. The component materials shall be within the following limits:

Residual Asphalt	5.5% to 9.5% by weight of dry aggregate
Mineral Filler	0% to 3.0% by weight of dry aggregate
Polymer-Based Modifier	Minimum of 3% solids based on bitumen weight content
Additive	As needed to control mixing and setting times
Water	As required to produce proper mix consistency

The completed mixture, after addition of water and any set control agent, shall be such that the micro-surfacing mixture has proper workability and

1. Permit the unrestricted flow of traffic on the micro-surfacing no more than one (1) hour after placement without the occurrence of bleeding, raveling, separation, or other distress, and
2. Prevent the development of bleeding, raveling, separation, or other distress within fifteen (15) days after placing the slurry seal.

If directed by the Engineer, the Contractor shall submit samples from all suppliers furnishing a minimum of the following materials. Each sample shall be clearly labeled as to its contents and the works "Micro-Surfacing."

1. 1-gallon of the base asphalt
2. 1-pint of the polymer additive (label polymer type)
3. 1-quart of asphalt emulsion
4. 50-pounds of micro-surfacing aggregate

Changes in source or type of materials submitted to the Engineer as Pre-qualification samples shall not be permitted during the entire project without the approval of the Engineer.

Mechanical Proportioning

Mixer-spreader trucks shall be equipped to proportion emulsion, water, aggregate, and self-control additives by volume and shall be designed to lay micro-surfacing. The material shall be mixed by an automatic-sequenced, self-propelled micro-surfacing mixing machine, which shall be a continuous-flow mixing unit

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able to accurately deliver and proportion the aggregate, emulsified, mineral filler, control setting additive, and water to a revolving multi-blade, double –shafted mixer and to discharge the mixed product on a continuous-flow basis. The machine shall have sufficient storage capacity for aggregate, emulsified, mineral filler, control additive and water to maintain an adequate supply to the proportioning controls.

The aggregate shall be proportioned using a belt feeder operated with an adjustable cutoff gate. The height of the gate opening shall be readily determinable. The emulsion shall be proportioned by a positive displacement pump. Any variable rate emulsion pump, if used, shall be calibrated and sealed in its' calibrated condition in accordance with California Test 109 prior to usage.

The aggregate belt feeder shall deliver aggregate to the pugmill with such volumetric consistency that the deviation for any individual aggregate delivery rate check-run shall not exceed 2.0 percent of the mathematical average of 3 runs of at least 3 tons in duration each.

The emulsion pump shall deliver emulsion to the pugmill with such volumetric consistency that the deviation for any individual rate check-run shall not exceed 2.0 percent of the mathematical average of 3 runs of at least 500 gallons in duration each.

The aggregate belt feeder shall be connected directly to the drive on the emulsion pump. The drive shaft of the aggregate feeder shall be equipped with a revolution counter reading to the nearest full revolution of the aggregate delivery belt.

A temperature indicating device shall be installed in the emulsion storage tank at the pump suction level, if requested by the Engineer. The device shall indicate temperature of the emulsion and shall be accurate to 10° F.

Machine Calibration and Verification

Mixer-spreader trucks to be used in performance of the work shall be calibrated in the presence of the Engineer prior to construction. The Contractor shall document the way in which the mechanical proportioning devices are calibrated and correlated to the metered delivery of each material at various settings. No mixer-spreader truck will be allowed to work on the project until the calibration has been completed and accepted by the Engineer within at least one (1) working day prior to start of work.

Spreading Equipment

The micro-surfacing mixture shall be agitated and spread uniformly in the surfacing box by means of twin-shafted paddles or spiral augers fixed in the spreader box and will conform to the following requirements:

1. A front seal shall be provided to insure no loss of the mixture at the road contact point. The rear seal shall act as a final strike-off and shall be adjustable.
2. The spreader box and rear strike-off shall be so designed and operated that a uniform consistency is achieved to produce a free flow of material to the rear strike-off.
3. The spreader box shall have suitable means provided to side shift the box to compensate for variations in the pavement geometry.

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4. Spreader box shall be capable of spreading a traffic lane width. All spreader boxes over 8 feet in application width shall have baffles, reversible motor driven augers, or other suitable means, to insure uniform application.
5. The maximum width coverage spread allowed per pass will be 16 feet.
6. Secondary Strike-off – A secondary strike-off shall be provided to improve surface texture. The secondary strike-off shall have the same adjustments as the spreader box.

Preparation of Surface

The Contractor shall protect existing curbs, gutters, raised pavement markers, manhole and utility covers and survey monuments from the slurry seal application. Existing facilities not adequately protected shall be cleaned or replaced at the Contractor's expense.

The Contractor shall be responsible for locating, covering, removing, cleaning and protecting all utility covers, and water valve boxes. The methods of protection, referencing, locating and cleaning shall be subject to approval by the Engineer prior to any resurfacing. All protective covering shall be removed from utility covers before opening the street to traffic.

It will be the Contractor's responsibility to clean pavement surfaces immediately prior to application of slurry seal. Existing paved surfaces and along the edge of pavement or gutter lips surfaces shall be free of clay, dust, weeds and other objectionable materials which may adversely affect bonding of the seal. The Contractor shall be responsible for sweeping all streets with a mechanical power broom prior to sealing including removing pavement stripes and pavement markers per the engineer. Micro-surfacing shall not be applied until an inspection of the surface has been made by the Engineer.

Placing

Micro-surfacing shall not be placed when the existing pavement or air temperature is below 50° F. and falling, or during unsuitable weather, but may be applied when both pavement and air temperature are above 50° F. and rising. Micro-surfacing shall not be placed if rain is falling or is imminent if there is the possibility that the finished product will freeze within 24 hours.

The micro-surfacing shall be placed at a rate of approximately 12 - 18 lbs dry aggregate per square yard. The exact rate will be as determined by specific weight of aggregate, the surface demand of the pavement, the size of the largest particle size of the aggregate and using the specific mass of the aggregate determined in the mix design.

All through driving lanes shall be spread in full lane width pulls only. Longitudinal joints shall correspond with the edges of traffic lanes. Micro-surfacing of driveway aprons, returns, and other incidental work shall be accomplished concurrently with application of the street

A maximum of three (3) inches shall be allowed for overlap of longitudinal lane line joints. The joint shall have no more than a one-fourth (1/4) inch difference in elevation when measured by placing a ten (10) foot straight edge over the joint and measuring the elevation drop-off.

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When micro-surfacing starts or finishes, a straight line cut-off shall be obtained by laying down a strip of building paper or other approved material. Such paper and any excess micro-surface shall be removed by the Contractor after application. Edge limits of the micro-surfacing on both sides of the streets shall be maintained in a neat and uniform line.

Building paper shall be placed at transverse joints and over previously placed micro-surfacing to avoid the double placement of micro-surfacing.

The joint between the pavement and the PCC gutter shall be sealed with micro-surfacing and overlap the lip of the gutter a minimum of 3/4 inches and a maximum of 2 inches.

When feasible, all joint and curb lines shall be pulled by machine to keep handwork to a minimum. Ridge or bumps in the finish surface will not be permitted.

Micro-surfacing mixture, to be spread in areas inaccessible to the controlled spreader box, may be spread by other approved methods. The contractor shall remove all excess material, which is placed outside asphalt pavement areas. Hand tools shall be available in order to remove spillage.

Where the completed micro-surfacing is not uniform in color, the street shall be treated to eliminate the color variation at the Contractor's expense. The method of treatment will be subject to approval by the Engineer.

The Contractor shall repair and reseal all areas of the streets which have not been sealed properly or completely at no additional cost to the District.

Adequate means shall be provided to protect the micro-surfacing from damage from traffic until such time that the mixture has cured sufficiently.

Rolling of the surface will be required with a pneumatic roller-unballasted at the discretion of the contractor supervisor and approved by the Engineer.

Sweeping

The Contractor shall sweep all sealed and adjacent areas with a self-propelled vacuum or regenerative air sweeper equipped with an operational spray bar as needed or as directed by the Engineer at no additional expense to the District.

Reports

The Contractor will deliver to the Engineer a report containing the following information:

1. Tons of dry aggregate consumed that day.
2. Tons of asphalt emulsion consumed that day.
3. Surface area covered that day - including streets names and/or portion thereof.

The report shall be delivered no later than 10:00 am of the following day.

MEASUREMENT AND PAYMENT

The contract price paid per square foot for Micro-surfacing, Type II, shall include full compensation for furnishing all labor, equipment, tools, materials and incidentals, and preparation required to provide and place micro-surfacing, including cleaning pavement surfaces as described by these specifications and as directed by the Engineer.

10-1.21 BLUE MARKERS – TWO WAY

Under this work, the Contractor shall furnish and install new raised reflectorized pavement markers at the locations and in accordance with the patterns indicated in the plans or as directed by the Engineer.

A raised reflectorized pavement marker shall consist of a two-way plastic prismatic retroreflector that is mounted in a durable iron casting. The raised reflectorized pavement marker shall be designed to provide nighttime visibility in wet weather conditions.

10-1.22 CROSSWALKS

This Work shall consist of furnishing and applying thermoplastic crosswalks per Section 84 of the State Standard Specifications, at the locations and in accordance with the details shown on the Plans or designated by the Engineer, and as specified in these Specifications.

Preparation of surfaces and application of thermoplastic or solvent-borne paint material shall conform to all requirements of Sections 84-1.03D, and 84-1.03E of the State Standard Specifications, and these Specifications. Tolerances and appearance shall conform to the requirements of Section 84-1.03C of the State Standard Specifications.

The price for linear feet of crosswalk shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the Work involved therein as shown on the Plans, as set forth in the Specifications and as directed by the Engineer.

10-1.23 STOP LEGENDS

This Work shall consist of furnishing and applying thermoplastic stop legends, at the locations and in accordance with the details shown on the Plans or designated by the Engineer, and as specified in these Specifications.

Preparation of surfaces and application of thermoplastic or solvent-borne paint material shall conform to all requirements of Sections 84 of the State Standard Specifications, and these Specifications. Tolerances and appearance shall conform to the requirements of Section 84 of the State Standard Specifications.

The price for each stop legend shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the Work involved therein as shown on the Plans, as set forth in the Specifications and as directed by the Engineer.

10-1.24 STOP BAR

This Work shall consist of furnishing and applying thermoplastic stop bars, at the locations and in accordance with the details shown on the Plans or designated by the Engineer, and as specified in these Specifications.

Preparation of surfaces and application of thermoplastic or solvent-borne paint material shall conform to all requirements of Sections 84 of the State Standard Specifications, and these Specifications. Tolerances and appearance shall conform to the requirements of Section 84 of the State Standard Specifications.

The price for each stop bar shall be paid for at linear feet, which includes full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the Work involved therein as shown on the Plans, as set forth in the Specifications and as directed by the Engineer.

10-1.25 GRIND/FILL CRACKS

DESCRIPTION

This item shall consist of routing, heat lancing, and sealing the existing transverse and longitudinal cracks and joints and random cracks in bituminous pavements in accordance with these specifications and in reasonably close conformity with the details shown on the plans.

MATERIALS

The sealant material shall be a hot pour elastimeric type conforming to the requirements of ASTM D 6690 Type II, together with the following modifications:

Cone Penetration at 77°F (25°C), 150 g, 5 sec	50 – 90
Flow at 140°F (60°C), 75 degree angle, 5 hrs	5 mm
Bond at 0°F (-18°C), 100 percent extension, ½” (12.7mm) thick specimen	Pass 5 cycles
Resilience at 77°F (25°C)	25 - 60

Storage, heating instructions, and cautions shall be printed on each box of sealant. The sealant shall be able to be reheated to application temperature at least once after the initial heat up without degradation of sealant specifications. Sealant shall have an application life at application temperature of approximately 12 to 15 hours.

MATERIAL ACCEPTANCE

Prior to the use of the sealant material, the Contractor shall submit to the Department, the appropriate material certification or laboratory test indicating that the material meets specification requirements. If the Contractor applies the material prior to receipt of the test reports, payment for the material shall be withheld until they are received. If the material does not pass the specification it shall be replaced at the contractor’s expense.

The Department may request samples for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

CONSTRUCTION METHODS

The sealant material shall not be applied when the weather is foggy, rainy or when the ambient and pavement temperatures are below 40° F.

EQUIPMENT

All machines, tools and equipment used in the performance of work required by these specifications will be subject to the approval of the Department and maintained in a satisfactory working condition at all times.

Router

The routing machine shall be an impact router equipped with carbide-tipped vertical-sided bits. It shall be portable and capable of routing existing asphalt surfaces along and adjacent to the crack and joint. The unit shall be capable of following random cracks and be designed to adjust the cutting widths. The unit shall be equipped with a cutter head clutch and shall have an adjustable depth control.

Hot Compressed-Air Lance (HCA)

The HCA shall be capable of producing air temperature up to 2500°F and constructed of suitable hardware. It shall be provided with separate valves to control propane, burner air, and lance air. The fuel and burner air shall be mixed only at the point of combustion before leaving the burner tube. A separate air lance tube shall pass inside the burner chamber and be orificed to a maximum 1/4". At the fuel source, a high-pressure regulator to control fuel pressure from 5 PSI to 30 PSI and to prevent flashback shall be used. Burner BTU should range from 20,000 to 500,000 BTU. A wheel kit constructed to keep the unit at the proper height and angle from the pavement should be used. No external flame shall be allowed to touch the pavement.

Hot-Applied Sealant Applicator (melter)

The melter applicator unit shall be a self-contained double boiler device with the transmittal of heat through a heat transfer oil. It shall be equipped with an onboard automatic heat-controlling device to permit the attainment of a predetermined temperature, then maintain that temperature as long as required. The unit shall have a means to vigorously and continuously agitate the sealant. The sealant shall be transferred from the unit to the crack by means of a direct-connected feed hose and wand. The equipment should be designed to allow the sealant to be circulated back into the unit when sealing is not being performed or equipped with a temperature controlled heated hose and wand that does not require circulation. The sealant should not be heated to a temperature in excess of that specified by the manufacturer.

PREPARATION OF CRACKS AND JOINTS

All open cracks and joints from 1/4" to 1-1/4" shall be routed to remove at least 1/8" from each sidewall. This will result in a minimum reservoir width of 1/2" to a maximum reservoir width of 1-1/2". The depth of the routing shall be approximately a one to one ratio (width to depth), subject to the discretion of the Department. Cracks wider than 1-1/4" shall be repaired in accordance with the details shown on the plans or as directed by the Department.

No sealant shall be installed until all cracks and joints have been cleaned free of all deleterious materials, including any dust, old sealant, incompressibles, and organic material*, and are sufficiently dry. Following the initial routing and cleaning operation, all cracks and joints shall be HCA lanced within 10 minutes of application of the sealant. Equipment for the two operations should be kept in a compact configuration such

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that not more than 50 feet separates equipment required by the two operations. Extreme care shall be used to ensure the crack sidewalls do not become overheated and burned.

Open cracks and joints between 1/8" to 1/4" shall be HCA lanced within 10 minutes of application of the sealant. Equipment for the two operations should be kept in a compact configuration such that not more than 50 feet separates equipment required by the two operations. Extreme care shall be used to ensure the crack sidewalls do not become overheated and burned.

*When vegetation exists in the cracks and joints, it shall be removed and those cracks and joints shall be treated with a herbicide that sterilizes the soil subject to the approval of the Department.

APPLICATION OF CRACK AND JOINT SEALANT

No sealant material shall be installed until all cracks and joints to be sealed have been inspected and approved by the Department. The sealant shall be applied in the crack or joint reservoir uniformly from the bottom to the top and shall be filled without formation of entrapped air or voids. Pouring pots or gravity-fed sealant applicators shall not be used for sealing cracks and joints. Joints and cracks shall be filled flush with the surface and any overfill shall be squeegeed so that the overband cap does not exceed 1/16" above the surface and the width does not exceed 2" beyond the crack edges. All overbanding shall be kept to a minimum. After the sealant has cooled, settling shall not exceed 3/8" below the surface.

PAVEMENT CLEANING AND PROTECTION

The pavement surface and all work areas shall be left in a clean condition. Vehicular traffic shall not be permitted on the pavement in the areas of the treated cracks and joints during the curing period. The Contractor shall supply all temporary traffic control devices (barricades, cones, signing, etc.) to protect the sealant, as required and approved by the Department. Any damage to uncured sealant shall be repaired at the contractor's expense.

BASIS OF PAYMENT

Payment shall be made at the contract unit price per lump sum for grind/filling cracks. This price shall be full compensation for furnishing all materials, for all preparation, and placing of the material, and for all labor, equipment, tools, and incidentals necessary to complete this item.

10-1.26 AS-BUILT DRAWINGS

General: The Contractor shall keep and maintain, at the job site, one record set of Contract Drawings. On these Contract Drawings, Contractor shall mark all project conditions, locations, configurations, and any other changes or deviations which may vary from the details represented on the original Contract Drawings, including buried or concealed construction and utility features which are revealed during the course of construction.

Special attention shall be given to recording the horizontal and vertical location of all buried utilities that differ from the locations indicated, or which were not indicated on the Contract Drawings. Said Record Drawings shall be supplemented by any detailed sketches as necessary or directed to fully indicate the Work as actually constructed.

These master Record Drawings of the Contractor's representation of "as-built" conditions, including all revisions made necessary by addenda, change orders, and the like, shall be maintained up-to-date during the progress of the Work.

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In the case of those drawings which depict the detail requirement for equipment to be assembled and wired in the factory, the record drawings shall be updated by indicating those portions which are superseded by change order drawings or final shop drawings, and by including appropriate reference information describing the change orders by number and the shop drawings by manufacturer, drawing, and revision numbers.

Record Drawings prepared by the Contractor shall be accessible to the Engineer at all times during the construction period and shall be delivered to the Engineer upon completion of the work.

Effect on Progress Payments: Requests for partial payments will not be approved if the record drawings are not kept current. All such Record Drawings will be inspected by the Engineer each month, showing all variations between the Work as actually constructed and as originally shown on the Contract Drawings or other Contract Documents, and the District will not process monthly payment requests until such drawings are made current each month.

Final Record Drawings: Upon substantial completion of the Work and prior to final acceptance by the District, the Contractor shall complete and deliver the completed set of Record Drawings to the Engineer for transmittal to the District, conforming to the construction records of the Contractor. This set of drawings shall consist of corrected plans showing the reported location of the Work. The information submitted by the Contractor and incorporated by the Engineer into the Record Drawings will be assumed to be reliable, and the Engineer will not be responsible for the accuracy of such information, or for any errors or omissions, which may appear on the Record Drawings as a result.

Effect on Final Payment: Final payment will not be approved until the Contractor-prepared Final Record Drawings have been delivered to the Engineer. Said up-to-date, Record Drawings may be in the form of a set of prints with carefully plotted information overlaid in pencil.

The price for lump sum shall be full compensation for Contractor in preparing As-Built plans as indicated above.