

**TECHNICAL SPECIFICATIONS
JANUARY 10, 2025**

**PULGAS AVENUE MINI-
ROUNDBOUT PROJECT
CITY PROJECT NO. ST-12**

TABLE OF CONTENTS

Section	Title	Page
100	Definition of Bid Items	TS-3
101	General Requirements	TS-12
102	Mobilization	TS-23
103	Traffic Control	TS-25
104	Stormwater Pollution Prevention	TS-32
105	Concrete Improvements	TS-38
106	Asphalt Concrete Grinding.....	TS-57
107	HMA Paving	TS-59
108	Slurry Seal	TS-66
109	Inter-Agency Contact Information.....	TS-71
110	Mini-Roundabout	TS-75
111	Signage and Striping	TS-78
112	Utility Structure Adjustments.....	TS-86

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 100

DEFINITION OF BIDITEMS

PART 1 – GENERAL

The bid item descriptions listed in the Bid Schedule of the proposal are not intended to be exclusive and comprehensive descriptions of all the work categories and scope necessary to complete the project. As such, the Contractor shall determine, segregate and include in his/her pricing for each bid item the cost for furnishing and installing all labor, materials, tools, equipment and other incidentals necessary to complete all of the contract work involved in the project, as described by the Contract Documents, complete in place.

Unless otherwise noted, estimated quantities on the bid schedule are believed to be accurate, however, the Contractor should self-verify the quantities as it relates to ordering sufficient material and scheduling work. Actual field measured quantities, complete in place, not the quantities listed in the bid schedule, will govern final payment.

PART 2 - BID ITEM DESCRIPTIONS

A - Mobilization (Bid Item No. 1)

The contract price paid for Mobilization shall include full compensation for performing the scope of work as specified in Technical Specifications Section 102, "Mobilization". The Contract lump sum price paid for "Mobilization/ Demobilization" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all work involved in mobilization, complete in place, including preparatory work and operations for the movement of personnel, equipment, supplies, and incidentals to the project site; for the establishment of all offices, buildings and other facilities necessary for work on the project; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various contract items on the project site, as shown on the drawings, as specified in the Project Specifications, and as directed by the Engineer.

Mobilization shall be measured and paid by **lump sum**. The Contract lump sum price for Mobilization should not exceed five percent (5%) of the total base bid contract price. Any amount bid on the bid schedule in excess of five percent (5%) shall be withheld from payment until the completion of project, to be paid as part of the final payment.

B - Traffic Control (Bid Item No. 2)

The contract price paid for Traffic Control shall include full compensation for performing the scope of work specified in Technical Specifications Section 103, "Traffic Control", including all necessary submittals, materials, implementation and maintenance of the approved traffic control plans for all work in construction zones throughout the duration of the project.

Payment for complying with the provisions for "Traffic Control" shall be paid by **lump sum** and paid on a percentage of completion of other items of work.

C – Stormwater Pollution Prevention (Bid Item No. 4)

The contract price paid for Stormwater Control, SWPPP, and BMP Implementation shall include full compensation for performing the scope of work as specified in Section 104, "Stormwater Pollution Prevention" of these Technical Specifications. The contract price shall include performing all the work necessary to prepare and implementing the Water Pollution Control Plan, and furnish, install and maintain all best management practices for the duration of the project in accordance with City and State standards, and as directed by the Public Works Director. This work shall include, but is not limited to: furnish, install and maintain temporary drainage inlet protection and fiber rolls, all cleaning

activities, such as street sweeping, to prevent construction dust and debris from entering the storm drain system, disposal and removal of materials at the completion of the project.

“Stormwater Control, SWPPP, and BMP Implementation” shall be paid on a **lump sum** basis, determined by percentage complete in the project (not to exceed 5% total) and no additional compensation shall be made. The contract lump sum price paid for “Stormwater Control, SWPP, and BMP Implementation” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals for doing all the work involved in developing, preparing, obtaining approval of, revising, amending, and implementing the water pollution control plan and maintaining best management practices (BMP’s), and for doing all the work involved in installing, constructing, maintaining, removing, and dispose of water pollution control practices, including non-storm water and waste management and materials pollution water pollution control practices, except those shown on the drawings and for which there is a contract item of work, as specified in drawings, the Standard Specifications, and the Technical Specifications, and as directed by the Engineer.

D – Construction Survey and Staking (Bid Item No. 3)

The contract price paid for Construction Survey and Staking shall include full compensation for performing the scope of work specified in Technical Specifications Section 101, “General Requirements”, including all necessary submittals.

Payment for complying with the provisions for “Construction Staking and Surveying” shall be paid by **lump sum** and paid on a percentage of completion of other items of work.

E – Construction Signage (Bid Item No. 32)

The contract price paid for Concrete Improvements shall include full compensation for performing the scope of work specified in Technical Specifications Section 111, “Striping and Signage”, including, as appropriate, but not necessarily limited to, fabrication and placement of sign.

F – Concrete Improvements (Bid Items No. 10-14, 34-36)

The contract price paid for Concrete Improvements shall include full compensation for performing the scope of work specified in Technical Specifications Section 105, “Concrete Improvements”, including, as appropriate, but not necessarily limited to, demolition of existing conditions in order to meet parameters of design, sawcutting of existing concrete along and reconstructing up to existing score lines, installation and removal of formwork, construction of concrete improvements, finishing, application of curing compound, restoration of surrounding improvements and asphalt concrete if and where needed for conform, etc., installation of detectable warning surfaces, and ensuring final grades are ADA compliant, and clean-up.

“Construct 4" PCC Sidewalk” shall be measured and paid on a per **square foot** basis of concrete and aggregate base installed in place. Cost of installation shall also include any demolition of existing sidewalk. Cost of installation should any retaining curbs and thickened slabs necessary.

“Construct Curb & Gutter” shall be paid on a **linear foot** basis, measured along the face of curb. Curb and gutter immediately adjacent to access ramps along the sidewalk, or immediately adjacent to bioretention areas along the sidewalk (from begin curves to end curves) shall not be counted as curb and gutter but shall instead be included under the per-each price paid for access ramps or bioretention area.

“Construct Type A1-6 Curb” – shall be paid on a **linear foot** basis and shall include any necessary asphalt conforms required to meet appropriate drainage.

“Concrete Curb Ramps” shall be measured and paid on a per **each** and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing, forming, reinforcing, placing concrete, removing forms, curing, finishing, loading, and removing waste materials from the site, supplying and installing detectable warning surface, depressed curbs, and constructing the facilities to construct each curb ramp following Caltrans Std. Plans A88A as indicated on the plans and described in these Project Specifications. Level landings at the top of a curb ramp are measured and paid for as sidewalk. Supplying and installing asphalt concrete in sawcut area adjacent to curb ramp is not included in the payment for this item and shall be considered as included in other items of work.

“Construct Mini-Roundabouts” shall be paid on a **lump sum** basis and shall include full compensation for furnishing all labor, materials, material removal, tools, equipment, asphaltic pavement grinding, rebar, doweling, coloring, finishing, and incidentals, and for doing all the work involved complete in place including providing a clean surface and adding a seal coat following grinding and all other preparation to provide complete in place mini-roundabout as shown on the Plans, as specified in the State Standard Specifications and these Specifications Section 110 “Mini-Roundabout” , and as directed by the Engineer. The work shall include

asphaltic pavement grinding, reinforcement, dowels, forming, rolled curb, asphalt concrete, stamped concrete, landscape work, median work and concrete placement as indicated in the Plans. Damage to the street resulting from construction activities shall be repaired to the satisfaction of the City Engineer.

“Driveway” shall be paid on a each basis and includes any concrete sidewalk constructed directly behind it. See “Construct 4” PCC Sidewalk” for definition of the sidewalk bid Item. The driveway shall be constructed per the San Mateo County Standard Driveway Details. The size of the driveway is to conform with the driveway approach width on the associated property (not to exceed the maximum per the detail).

Per sheet L-02 of the plans, additional concrete work will be completed as part of the project on the northern section of Beech Street, west of the Pulgas Avenue and Beech Street intersection. The scope includes sidewalk, driveway, and curb and gutter work up until the eastern corner of the driveway of 1087 Beech Street. This includes all clearing and grubbing and conform work. The quantity breakdown is listed below:

Item	Quantity	Unit
Unclassified Excavation (includes clearing and grubbing)	1	LS
Class II Aggregate Base (6")	15	CY
Construct 4" PCC Sidewalk	400	SF
Construct Curb and Gutter	160	LF
Driveway	4	EA

G – Pavement Rehabilitation (Bid Items No. 6-8)

“AC Pavement(12”)” shall be measured and paid per **ton**, over the area and thickness indicated on the plans and specifications. The contract price paid for Hot Mix Asphalt (HMA) shall include full compensation for performing the scope of work specified in Technical Specifications Section 107, “HMA Paving” including but not necessarily limited to cleaning the existing surface as needed, application of asphaltic prime coat and/or binder, placement and compaction of asphalt concrete (including the removal and reconstruction of AC pavement transitions); testing; repair of poor workmanship or damage, and clean-up. Contractor shall furnish weight tags to the Public Works Director daily and shall indicate on the tags the location (lane and which pass) the material was used.

“Grind and Overlay (3”)” shall be paid on a ton basis as specified in the Technical Specifications. The contract price paid shall include full compensation for performing the scope of work specified in Technical Specifications Section 106 “Asphalt Concrete Grinding” and Section 107, “HMA Paving and Base Repair” including but not necessarily limited to cleaning the existing surface as needed, application of asphaltic prime coat and/or binder, placement and compaction of asphalt concrete; testing; repair of poor workmanship or damage, and clean-up. Contractor shall furnish weight tags to the Public Works Director daily and shall indicate on the tags the location (lane and which pass) the material was used.

“Class II Aggregate Base (6”)” shall be paid on a **cubic yard** basis based on the actual quantity and shall include full compensation for furnishing all labor, materials, tools, equipment, backfilling, grading, compacting, finishing, hauling, disposing, and incidentals and for doing all the work involved complete in place and no additional compensation will be allowed therefor.

Class II Crushed Aggregate Base shall be in conformance with Sections 105 and 107 of the Standard Specifications. Crushed Aggregate Base shall be a minimum of 6" thick with subgrade areas located beneath AC pavement compacted to a relative compaction of 95 percent. Crushed Aggregate Base shall be constructed to the line, grades and design shown on the plans and under the proposed pavement or concrete improvements or as ordered by the Engineer.

H – Utility Structure Adjustments (Bid Items No. 9)

"Adjust Utility to Grade" shall be measured and paid for per **each** .

This includes but not necessarily limited to, replacement materials (where applicable), raising/lowering frames and covers, additional AC removal around each structure if required, replacing concrete collars and paving, and clean-up. Adjustments to manholes, fire hydrants, water valves, water meters and pullboxes shall be performed as specified in Technical Specifications Section 112 "Utility Structure Adjustments".

Contractor is responsible for coordinating with the utility providers.

I – Utility (Bid Items No. 15-19)

"Install Inlet" shall be measured and paid for per **each** . Measurement and payment for each "Install Inlet" shall full compensation for each structure complete in place, including excavating, backfilling, constructing inverts, furnishing frames and covers and/or grates, installing frames and covers and/or grates, restoring the street surface and all other work, including temporary resurfacing, necessary to complete the work. Removal of existing storm drainpipe and/or structures required for the installation of the drain inlet shall be included in the price paid for other bid items, and no additional payment shall be made therefor.

"Remove Storm Drain Inlet" shall be measured and paid for per **each** . Measurement and payment for "Remove Storm Drain Inlet" shall be made at the contract unit price of each inlet removed and shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and all work involved in saw-cutting, excavating, removing, off-hauling, and disposing of existing concrete and asphalt, road base, subgrade soils, and debris, compacting and finishing subgrade, loading, and removing waste materials from the site, clearing, and grubbing, and performing the work as indicated on the plans and described in the Project Specifications. Removal or abandoning of existing storm drainpipe required for the removal of the drain inlet shall be considered included in the price paid for other bid items, and no additional payment shall be made therefor.

"Remove Storm Drain Pipe" shall be measured and paid per **linear foot** . Measurement and payment for "Remove Storm Drain Pipe" shall be made at the contract unit price per linear foot and shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and all work involved in saw-cutting, excavating, removing, off-hauling, and disposing of existing concrete and asphalt, road base, subgrade soils, and debris, compacting and finishing subgrade, loading, and removing waste materials from the site, clearing, and grubbing, and performing the work as indicated on the plans and described in the Project Specifications.

"Install Manhole" shall be measured and paid for per **each**. Measurement and payment for "Install Manhole" shall be made at the contract unit price of each manhole and shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and all work involved for each structure complete in place, including excavating, backfilling, constructing

inverts, furnishing frames and covers and/or grates, installing frames and covers, restoring the street surface and all other work, including temporary resurfacing, necessary to complete the work. Removal of existing storm drainpipe and/or structures required for the installation of the drain inlet shall be included in the price paid for other bid items, and no additional payment shall be made therefor.

"Install 12" RCP Storm Drain" shall be measured and paid per **linear foot**. The Contract price paid per linear foot for "Install 12" RCP Storm Drain" shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and all work involved in furnishing the pipe material, labor, all wyes, tees, bends, and special details shown on the plans; the closing or removing of abandoned conduit structures; the saw cutting of bituminous pavement, concrete pavement, curbs, gutters, sidewalks, and driveways; the excavations of the trench; trench shoring, the removal of interfering portions of existing storm drains, and improvements; the disposal of the excavated material; the control and discharge of ground and surface waters not paid by separate item; the preparation of subgrade; placing and joining pipe, supplying and placement of bedding material; supplying and placement of imported backfill material or special backfill material; removing and replacing storm drain pipes including all necessary work to adjust the inlets to make the storm drain pipes flow properly; permanent and temporary resurfacing; removal and replacement of pavement markings, traffic striping, and pavement markers not paid by separate bid item; replacement of curbs, gutters, sidewalks, traffic island/median and driveways; landscape restoration; protecting and restoring all improvement to pre-construction conditions; and all work necessary to install the pipe, complete in place

J – Striping and Signage (Bid Items No. 20- 31)

The contract price paid for Pavement Striping, Markings and Signage shall include full compensation for performing the scope of work specified in Technical Specifications Section 111, "Striping and Signage", including but not necessarily limited to, pavement preparation, establishing alignment and layout (cat-tracking), placement of new striping in thermoplastic or paint, application of markers, painting curbs, corrective work and clean-up.

"Detail 22" shall be measured and paid for on a per **linear foot** basis.

"Detail 40" shall be measured and paid for on a per **linear foot** basis.

"6" Yellow Stripe" shall be measured and paid for on a per **linear foot** basis.

"Crosswalk Marking" refer to High Visibility Yellow Crosswalks as defined in the California Manual of Uniform Traffic Control Devices shall be paid per **square foot**.

"12" Yield Limit Line A24E" shall be measured and paid for on a per **square foot** basis.

"Shared Lane Bicycle Marking" shall be paid per **each** and shall follow NACTO/CA MUTCD standards.

"Type H Reflectors" and "Type Q(CA) Object Marker" shall be measured and paid for per **each**.

"Install Sign and Post" shall be measured and paid for per **each** and shall include full compensation for furnishing signs and sign posts, and all labor, materials, tools, equipment, incidentals, installation of posts and foundations, and for doing all the work involved in installing roadway signs as shown in the Plans.

"Remove Existing Sign and Post", "Relocate Sign and Post" shall be paid per **each** and shall include applicable posts, sign, and sign foundations.

"Remove Existing Striping" shall be paid on a **lump sum** basis.

K – Excavations (Bid Items No. 5, 33)

“Unclassified Excavation (includes clearing and grubbing” shall be measured and paid for on a **lump sum** basis and shall be made in accordance with the Technical Specifications. This bid item shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the working involved in any excavation as shown on the Plans and as specified in the Specifications herein. ~~Based on the quantity breakdown~~

Item	Quantity	Unit
Curb and Gutter	330	LF
PCC Removal	323	SY
AC Removal	210	CY

Please see the table below for the quantity breakdown for the alternative bid schedule:

Item	Quantity	Unit
AC Removal	30	CY

The work to be done under this section shall consist of the removal of existing concrete, asphalt, irrigation, and any other material necessary for the construction of the various items of work, except shown as a separate Bid Item in the Bid Schedule. Asphalt concrete adjacent to the curb and gutter and the driveway approaches shall be neatly saw cut and removed two (2) feet from the gutter lip prior to demolition. The adjacent road section (existing asphalt and base material) shall also be removed to a depth of nine (9) inches. The void left after gutter replacement shall be backfilled with full depth ½” medium PG 64-10 asphalt concrete and compacted to a minimum ninety-five percent (95%) relative compaction. When replacing asphalt, the Contractor shall follow the standards specified in Section 107 . Payment for asphalt concrete and compaction shall be made in accordance with AC Pavement (Bid Item 7).

During concrete demolition the Contractor shall exercise caution not to cause additional damage to the existing asphalt, concrete, curb and gutter, or any other surrounding structures. Breaking up concrete, dumping it on the asphalt, and scraping it up with a bobcat or loader is not permitted. Any damage caused by these practices will result in the Contractor replacing the section of asphalt or damaged concrete. There are areas within the limits of work where private

landscaping features may encroach into the public right-of-way. These, and other items to be removed that are considered private and reusable, shall be removed in a manner so as to not damage the decorative item and salvaged. During surface clearing operations, the Contractor shall not cover or bury any plant growth or other objectionable materials on public or private property.

END OF SECTION 100

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 101

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 WORK INCLUDED

All work shall conform to the applicable provisions of the San Mateo County Standard Specifications and Details, the latest State of California, California Manual on Uniform Traffic Control Devices (MUTCD), Department of Transportation, Standard Plans and Standard Specifications; and the project plans and specifications.

No work shall be performed on Saturdays and Sundays for the duration of this project unless a variance is approved by the City.

Implementation of Construction Best Management Practices (BMPs) will be required for this project.

1.2 ROADWAY PREPARATION

The work under this section consists of preparing the roadway prior to resurfacing or reconstruction as specified in the Special Provisions, these Technical Provisions, and as required by the City Engineer. Such work shall include controlling nuisance water; sweeping; watering; removal of all raised pavement markers; removal of all thermoplastic pavement markings; removal of loose and broken concrete, asphalt concrete pavement, and foreign material; and the spraying and removal of weed growth. In addition, the Contractor shall implement a Storm Water Pollution Prevention Program prior to the start of construction, as specified in the Special Provisions. The Storm Water Pollution Prevention Program shall also comply with Section 13 Water Pollution Control of the State Standard Specifications.

1.3 PROJECT SITE MAINTENANCE

Throughout all phases of construction until final acceptance, including any periods of work suspension, the site shall be kept clean and free from rubbish and debris. The Contractor shall furnish and operate a self-loading motor sweeper with spray nozzles at least once each working day for the purpose of keeping paved areas acceptably clean wherever construction, including restoration, is incomplete.

Dust control shall consist of applying either water or dust palliative, or both, for the alleviation or prevention of dust nuisance. Dust resulting from the Contractor's performance of the work, either inside or outside the right of way, shall be controlled by the Contractor in conformance with the provisions in Section 7, "Legal Relations and Responsibility to the Public" of the State Standard Specifications. Water shall be applied as provided in Section 17 "Clearing and Grubbing" and dust palliative shall conform to and be applied as provided in Section 18 "Dust Palliative" of the State Standard Specifications.

Excess excavated materials from any source shall be removed from the site immediately. Forms and lumber shall be removed the day of form removal. Materials and equipment shall be removed from the site as soon as they are no longer necessary.

Before the final inspection, the site shall be cleared of equipment, unused materials, and rubbish so as to present a satisfactory clean and neat appearance. All pavement areas shall be swept with a street sweeper immediately prior to the final inspection. All concrete areas shall be broom cleaned. All topsoil areas shall be raked. All cleanup costs shall be included in the Contractor's bid. In the event that the Contractor fails to perform this final cleanup, the Agency may remove and/or

dispose of the articles or materials at the Contractor's expense. Care shall be taken to prevent spillage on haul routes. Any such spillage shall be removed immediately and the area cleaned.

The Contractor is advised that the disposal of solid waste sewage, industrial waste or other polluted waters into public storm drain system is prohibited under East of Palo Alto Municipal Code and under California State Fish & Game Code Section 5650. Any fines or penalties levied against the Contractor for violation of the above and related regulation are the sole responsibility of the Contractor.

1.4 SANITARY FACILITIES

The Contractor shall provide and maintain enclosed, portable restrooms for the use of personnel engaged in the work. These accommodations shall be maintained in a neat and sanitary condition, and shall comply with all applicable laws, ordinances, and regulations pertaining to public health and sanitation.

1.5 STAGING & STORING

The Contractor shall store all equipment and materials in a manner which does not interfere with public right of way. No equipment will be allowed to be parked overnight within the limits of the public right-of-way. Contractor may make arrangements with local property owners for temporary staging areas; however, the location shall first be brought to the attention of the Engineer for approval. Contractor will also be required to provide proof in writing from the property owner that the Property is allowed for use as a temporary staging area.

Contractor shall take adequate measures to secure all equipment and materials at the staging area after the completion of work each day. The City will not be responsible for any damage or loss incurred on Contractor's equipment or materials.

1.6 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS

The Contractor shall be responsible for the protection of public and private property adjacent to the work and shall exercise due caution to avoid damage to such property.

The Contractor shall repair or replace all existing improvements within the right-of-way or on adjacent private property which are not designated for removal, but that are damaged or removed as a result of its operations. Repairs and replacements shall be at least equal to existing improvements and shall match them in finish and dimension.

1.7 PRE-CONSTRUCTION DOCUMENTATION

Contractor shall submit a video on DVD of the construction area prior to beginning work. This video shall be the existing condition record of the job site. The taping shall be done by the Contractor and a copy of the DVD shall be furnished to the Project Inspector at the beginning of the Work. The Project Inspector may participate during the videotaping task. Contractor shall provide a written log noting defects or irregularities in the existing pavement area.

1.8 PUBLIC NOTIFICATION AND OUTREACH

Two weeks prior to beginning any work on the project, the Contractor shall deliver written notice to all adjoining residents, businesses, tenants and other applicable parties listed below. Notice shall be given for general construction activity in an area as well as specific activities that will, in anyway, inconvenience residents/property owners/tenants or affect their operations or access to their property. Such notices shall include the expected date for start of construction, a general description of the construction activity to take place, expected duration, and the name, address, and contact number of the Contractor's superintendent and of the City's Project Engineer.

A follow up notice shall be distributed two days prior to the construction activity. Copies of all notices shall be provided to the Engineer for approval five working days prior to the desired distribution date.

The Contractor shall contact and coordinate the work with the following, but not limited to, parties. Two-week notification shall also be given to adjacent properties prior to beginning any work.

1.9 COORDINATION WITH OTHER PROJECTS

Contractor shall make arrangements with the Engineer to coordinate construction schedule operations between the City's adjacent projects and this Project to avoid conflict between projects.

1.10 CONSTRUCTION STAKING AND SURVEYS

- A. Contractor shall furnish all surveying and construction staking required to complete the construction as shown on the plans. Contractor shall indicate the surveying activities within the required project schedules.
- B. All construction staking shall be done by a Civil Engineer authorized to practice land surveying or a land surveyor registered in the State of California, hired by the Contractor.
- C. Stakes shall be installed at 25' intervals or less, unless otherwise permitted by the Public Works Director.
- D. All stakes shall be clearly marked and copies of cut sheets shall be provided to the City at least two working days in advance of their planned use. This shall in no way relieve the Contractor of the responsibility for assuring final grades, alignments and locations of improvements that conform to the plans.
- E. All official survey monuments or benchmarks shall be carefully preserved. If a monument or benchmark is anticipated to be disturbed, the Contractor shall reference its location and elevation to at least four short ties (set iron pipes) and two copies of the field notes showing the ties shall be presented to the Public Works Director for review and approval prior to disruption. A surveyor registered in the State of California shall remark the monuments after construction is complete and file appropriate paperwork with the County Recorder's office.
- F. In cases of accidental damage or displacement of the monuments where, in the opinion of the Public Works Director, new concrete monuments are required, two copies of the field notes showing new locations, ties and elevations shall be furnished to the Public Works Director. New monuments shall be of a type and quality in accordance with the San Mateo County Standard Drawings and shall be placed in a manner consistent with good and recognized engineering and surveying practices in accordance with State of California and County of San Mateo regulations. Replacement of monuments disturbed by the Contractor shall be paid for at the Contractor's sole expense.
- G. Control points and additional horizontal control data (CAD files) will be provided to the Contractor after award of contract.
- H. Construction staking and surveys for line and grade shall be the responsibility of the Contractor.
- I. All work shall conform to Section 5-1.26 "Construction Surveys" of the State Standard Specification.

1.11 TESTING AND SAMPLING

- A. Work shall include the Sampling & Testing of construction methods and installed materials, to determine compliance with contract requirements of installed conditions of base repairs - digouts, and hot mix asphalt paving. Sampling and testing shall be performed when required by the specifications.
- B. Sampling & testing shall also be in conformance with Section 39 of the State Standard Specifications.
- C. Testing shall be undertaken by **an independent, third party, testing laboratory/contractor** qualified to perform sampling and testing required by this contract. Selection of testing laboratory/contractor shall be approved by the Engineer. Sampling and Testing shall be paid for by the Contractor.
- D. Prepare a written record that documents the location, date and time of the sampling and testing for each of the following technical specifications sections and their associated work:
 - Hot Mix Asphalt (HMA)/AC Paving
- E. Testing results shall be provided showing actual results and include a statement that the item tested or analyzed conforms or fails to conform to specified requirements. Test results shall cite applicable specification references and required tests or analytical procedures used. Test results shall be certified by a testing laboratory representative authorized to do so. Report shall have the cover sheet conspicuously stamped in large red letters "CONFORMS" or "DOES NOT CONFORM". If the item(s) fails to conform, the laboratory shall notify the Engineer.

Sampling and testing results shall be submitted daily, within 24 hours of test taking. Tests that require more than 24 hours for processing shall be submitted within 24 hours of completion of test.

Submittal of results 24 hours beyond the completion of lab work shall be subject to \$250 penalty per late submittal.

Complete all required testing identified in Section 39 of the State Standard Specifications for the work related with "4-Inch Base Failure Repair (Digouts)" and "Hot Mix Asphalt (HMA)" Technical Specification sections.

1.12 TREE AND ROOT PROTECTION

Due care shall be taken when working near trees, public or private. For all phases of the work, Contractor is responsible for protecting trees and Contractor will replace any trees judged damaged by the City, unless otherwise noted on the Plans.

Trees situated in a tree well or sidewalk planting strip shall be wrapped with 4 layers of orange plastic fencing as padding from the ground to the first branch with 1-inch thick wooden slats bound securely on the outside. During installation of the wood slats, caution shall be used to avoid damaging any bark or branches. Major scaffold limbs may also require protection as directed by the Engineer to a height of 12 feet above the ground. Contractor shall make every effort to keep deleterious materials associated with project construction from contacting any part of the trees.

For all phases of work, Contractor shall not cut any roots greater than 2-inches in diameter. When roots greater than 2-inches in diameter are encountered, Contractor shall notify the Engineer and allow 3 business days to cut the roots. No compensation shall be given to the Contractor for any time for the City root cutting. Contractor shall not scrape, skin, or pull on roots. Any root cutting shall be done with clean and sharp blades/tools.

Should tree, root, and/or bush pruning be required to construct the improvements shown on the plans, specified in these Specifications, and as directed by the Engineer, Contractor shall notify the Engineer and allow 3 business days before pruning. All pruning shall be done as directed by the City Arborist and in the presence of the City Arborist.

Contractor shall make every effort to avoid damaging any City owned property, including (roots, trunk and canopy of) City maintained trees. If damages to trees are found to be as part of Contractor negligence, Contractor shall be responsible for as follows:

- a. Contractor will provide full reparation to include: removal of irreparable tree and replacement with similar approved species. Contractor will perform this work themselves (at Contractor's expense) under supervision of City forestry personnel, and/or,
- b. Contractor will reimburse City for City expenses incurred in the related reparation work, consisting of but not limited to, site inspections, corrective pruning, tree removal, and tree replacement.
- c. Damages shall be graded 1 (minor) through 5 (replacement), as determined by City, with monetary values attached.

1.13 SITE CLEANUP

Payment for work required under the General Requirements shall be included in the prices bid for the individual items of work and no additional compensation will be allowed therefore unless specifically noted otherwise.

In the event that the Contractor fails to perform this final cleanup, the Agency may remove and/or dispose of the articles or materials at the Contractor's expense.

Care shall be taken to prevent spillage on haul routes. Any such spillage shall be removed immediately and the area cleaned.

The Contractor is advised that the disposal of solid waste sewage, industrial waste or other polluted waters into public storm drain system is prohibited under East of Palo Alto Municipal Code and under California State Fish & Game Code Section 5650. Any fines or penalties levied against the Contractor for violation of the above and related regulation are the sole responsibility of the Contractor.

1.14 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS

The Contractor shall be responsible for the protection of public and private property adjacent to the work and shall exercise due caution to avoid damage to such property.

The Contractor shall repair or replace all existing improvements within the right-of-way or on adjacent private property which are not designated for removal, but that are damaged or removed as a result of its operations. Repairs and replacements shall be at least equal to existing improvements and shall match them in finish and dimension.

1.15 POTHOLING PRIOR TO WORK

- A. Prior to any demolition work, Contractor must pothole project site to confirm underground utility conflicts. At all times during construction, all operating Underground Facilities shall remain in operation, unless the Contract Documents expressly indicate otherwise. Contractor shall maintain such Underground Facilities in service where appropriate; shall repair any damage to them caused by the Work; and shall incorporate them into the Work, including reasonable adjustments to the design location (including minor relocations) of the existing or new installations. Contractor shall take immediate action to restore any in service

- installations damaged by Contractor's operations.
- B. Prior to performing Work at the Site, Contractor shall lay out the locations of Underground Facilities that are to remain in service and other significant known underground installations indicated by the Underground Facilities Data. Contractor shall further locate, by carefully excavating with small equipment, potholing and principally by hand, all such utilities or installations that are to remain and that are subject to damage. If additional utilities whose locations are unknown are discovered, Contractor shall immediately report to Owner for disposition of the same.
 - C. If during construction, an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated in the materials supplied by Owner for bidding or in information on file at USA or otherwise reasonably available to Contractor, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby (and in no event later than seven Days), and prior to performing any Work in connection therewith (except in an emergency), identify the owner of such Underground Facility and give written notice to that owner and to Owner. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
 - D. The cost of all of the following will be included in the Contract Sum and Contractor shall have full responsibility for (a) reviewing and checking all available information and data including, but not limited to, information made available for bidding and information on file at USA; (b) locating all Underground Facilities shown or indicated in the Contract Documents, available information, or indicated by visual observation including, but not limited to, and by way of example only, engaging qualified locating services and all necessary backhoeing and potholing; (c) coordination of the Work with the owners of such Underground Facilities during construction; and (d) the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
 - E. Consistent with California Government Code §4215, as between Owner and Contractor, Owner will be responsible for the timely removal, relocation, or protection of existing main or trunk line utility facilities located on the Site only if such utilities are not identified in the Contract Documents or information made available for bidding. Owner will compensate for the cost of locating and repairing damage not due to Contractor's failure to exercise reasonable care, removing and relocating such main or trunk line utility facilities not indicated in the Contract Documents or information made available for bidding with reasonable accuracy, and equipment on the Project necessarily idled during such Work. Contractor shall not be assessed liquidated damages for delay in completion of the Project, when such delay was caused by the failure of Owner or the utility to provide for removal or relocation of such utility facilities.

1.16 ORDER OF WORK

Work Sequence and Specific Considerations shall include but shall not be limited to the following provisions (i.e., although these requirements are not restated under each individual bid item, they shall be deemed included under each bid item as applicable at no additional cost). The following is a list of general sequences and special considerations for the project:

First order of work:

- A. Contractor, except in an emergency, shall contact the appropriate regional notification center, Northern California Underground Service Alert at 811 or 1-800-227-2600 or on-line at www.digalert.org at least three working days prior to commencing any excavation, and obtain an inquiry identification number from that notification center. No excavation shall be commenced or carried out by the Contractor unless such an inquiry identification number has been assigned to the Contractor or any subcontractor of the Contractor and the City has been given the identification number by the Contractor.
- B. The Contractor shall pothole for utilities sufficiently in advance of construction to permit grade adjustments of the water main to maintain desired clearances. No pipe shall be installed until potholing is complete. Coordinate with the City.

- C. The contractor is responsible for conducting any and all coordination required among impacted utility companies and work with the City Engineer to confirm schedules and performance.
- D. All monumental benchmarks, land corners, and triangulation points, established by other surveys, existing within the construction area shall be preserved. If existing monuments interfere with the work, secure written permission before removing them.

1.17 FENCE RELOCATIONS

As noted on project plans, all fences located within City right-of-way will be relocated to right-of-way. All fences shall be salvageable during relocation and shall be coordinated with homeowner. Fences that are not salvageable due to materials or condition of fence shall be documented and brought to the attention of the City prior to removal.

1.18 REFERENCES

All references to 'City' in any of the contract documents or referenced standards or publications shall mean the City of East Palo Alto.

All references to 'Engineer' in any of the contract documents or referenced standards or publications shall be the designated representative of the City of East Palo Alto.

1.19 MEASUREMENT AND PAYMENT

Payment for work required under the General Requirements shall be included in the prices bid for the individual items of work and no additional compensation will be allowed therefore unless specifically noted otherwise.

END OF SECTION 101

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 102

MOBILIZATION

PART 1 - GENERAL

1.01 WORK INCLUDED

Mobilization shall consist of preparatory work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site, and implementation of environmental commitments described on Local Assistance NEPA Permits & Environmental Commitment Record in Appendix C of these Specifications, and for all other work and operations which must be performed or for costs incurred prior to beginning work and in the course of work on various contract items at the project site.

The Contractor is advised that there may be insufficient area within the construction zone to provide parking, staging for material and storage of equipment.

PART 2 – MATERIAL AND EQUIPMENT

(None)

PART 3 – EXECUTION

(None)

PART 4 – MEASUREMENT AND PAYMENT

Included in Section 100 of these Technical Specifications.

END OF SECTION 102

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 103

TRAFFIC CONTROL

PART 1 - GENERAL

1.01 WORK INCLUDED

Work shall consist of providing for safe movement of vehicular, bicycle and pedestrian traffic, including persons with disabilities in accordance with the American's with Disabilities Act (ADA), and traffic control, and construction and equipment staging as described on Local Assistance NEPA Permits and Environmental Commitment Record in Appendix C of these Specifications, through and around construction operations. Traffic control requirements set forth herein are the minimum requirements imposed. The Contractor shall be solely responsible for providing all protective measures necessary.

Should the Contractor fail, in the opinion of the Public Works Director, to provide all the materials, work force and equipment necessary to maintain traffic around the work area as set forth herein, the City, upon the recommendations of the Public Works Director, may take steps necessary to suspend the work. The City may then upon such suspension, perform such work as may be necessary to maintain traffic, and charge all associated costs against the Contractor.

The contractor shall provide two traffic changeable message boards at beginning and end of project limits (2). Placement of boards shall be confirmed with East Palo Alto Police Department and City inspector prior to placement. Location of changeable message boards shall be included in traffic control plan that is to be submitted by contractor as per subsection 1.03 "Submittals" of this section.

Work shall also consist of submitting to the City for review comprehensive traffic control, construction (equipment and material) staging, and construction phasing plans prepared for each phase of construction.

1.02 REFERENCES

The Contractor shall comply with the latest edition of the "Work Area Traffic Control Handbook" published by Building News Inc.; the "California Manual of Uniform Traffic Control Devices (CA MUTCD), Part 6, "Temporary Traffic Control", hereinafter referred to as the Traffic Control Manual; and the State Standard Plans and Specifications, California Department of Transportation, latest edition, for items related to traffic control within the work area.

1.03 SUBMITTALS

A. TRAFFIC CONTROL PLAN

At least 15 working days prior to start of work, the Contractor shall submit a traffic control plan describing how traffic control will be achieved during the life of the project, prepared by a traffic engineer or registered civil engineer for approval prior to commencing work. The plans shall be in accordance with the Standard Plans and Specifications and the CA MUTCD on scaled drawings showing required signs, traffic control devices and flaggers for each situation anticipated to be encountered, i.e., intersections, mid-block, etc. both during working and non-working hours.

The traffic control plan shall provide a detailed approach for controlling traffic through the construction zone and for any proposed detours. The traffic control plan shall designate truck routes, where all vehicles exceeding 12,000 pounds gross weight hauling materials to or from the job site shall follow the established truck route streets to the closest point of the job site. The traffic control plan shall also be directed to the regulation and protection of pedestrian traffic including pedestrians, bicyclists, joggers, skaters, skateboarders, etc.

Once approved, the Contractor may modify the Traffic Control Plan only with permission from the Public Works Director.

CONSTRUCTION (EQUIPMENT AND MATERIAL) STAGING / FACILITIES

Staging of equipment and material shall be proposed and secured by the Contractor and approved by the Public Works Director. Contractor may not occupy any property outside of the right-of-way as shown on the plans.

At least 15 working days prior to start of work, the Contractor shall submit a construction (equipment) staging plan for approval prior to commencing work.

B. CONSTRUCTION PHASING PLAN

At least 15 working days prior to start of work, the Contractor shall submit a construction phasing plan for approval prior to commencing work. The plans shall be in accordance with the Standard Plans and Specifications and the CA MUTCD on scaled drawings showing required signs, traffic control devices and flaggers for each situation anticipated to be encountered during working and non-working hours.

The construction phasing plan shall provide a detailed approach for controlling traffic through the construction zone for each stage or portion of the work. It shall show traffic control devices and signage necessary for phased construction or modifications to existing lane configurations.

Once approved, the Contractor may modify the Construction Phasing Plan only with permission from the Public Works Director.

Construction phasing plan shall be limited to not more than one block and one side of the road at a time or not more than 1000 feet and one side of the road at a time in order to minimize pedestrian traffic interruption. Contractor shall also practice same measures for concrete work associated to sidewalk construction.

PART 2 – MATERIAL AND EQUIPMENT

2.01 TRAFFIC CONTROL DEVICES

Traffic control devices shall conform to the CA MUTCD. Temporary warning signs in the construction area shall have a black legend and border on an orange background. The color of other signs shall follow the standard for all highway signs.

Cones and delineators shall consist of cylindrical or cone shaped plastic devices, 18 inches to 48 inches in height. Cones or delineators shall have a flexible base of suitable weight, which will ensure stability.

Barricades shall be Type I, Type II or Type III as set forth in the Standard Plans and Specifications, and the CA MUTCD. Barricades used during hours of darkness shall be equipped with flashers.

Traffic control devices shall include a minimum of two (2) "Expect Delays" portable changeable message signs (CMS), to be placed at locations approved by the Public Works Director at least 7 days before the state of construction.

PART 3 – EXECUTION

3.01 PLACEMENT, MAINTENANCE AND REMOVAL OF TRAFFIC CONTROL DEVICES

Proper traffic movement through the work area depends upon the driver controlling and directing his/her vehicle properly under unexpected situations. The Contractor shall advise the public of such conditions through the use of signs, flaggers, pavement markings, barricades, lights, cones and delineators.

Whenever construction operations obstruct the flow of vehicular or pedestrian traffic or present a hazard to vehicles or pedestrians in the vicinity of construction operations, the Contractor shall take appropriate action to warn, detour, protect and separate drivers and pedestrians from the work area and to direct them to alternate routes.

No one standard sequence of signs or control devices will suit all conditions, which may result from construction operations. Even for the same work the conditions may vary from hour to hour, requiring adjustment and revision of the traffic control program in effect. It is the Contractor's responsibility to adjust his /her traffic control based on the location and situation of the street.

No work may begin at any location until traffic control devices have been placed and if required, adjusted, and revised.

The Contractor shall furnish, install, maintain, and remove at his expense all barricades, signs, lights, or other devices in sufficient quantities necessary to adequately warn of any obstructions to the vehicular or pedestrian travel way. Flaggers shall be provided as necessary for the safety of pedestrians and vehicular traffic and to provide access to properties adjacent to the work.

The provisions in this section will not relieve the Contractor from his responsibility to provide such additional devices or take such measures as may be necessary to comply with the provisions of Section 7-1.04, "Public Safety", of the State Standard Specifications. If any component in the traffic control system is displaced or ceases to operate or function as intended, the Contractor shall immediately repair or replace the component and restore it to its original location.

At the end of each workday, the Contractor shall remove all components of the traffic control system, except portable delineators placed along a pavement elevation differential, or as required by the Public Works Director.

Construction area signs shall be furnished, installed, and maintained by the Contractor. The term "Construction Area Signs" shall also include temporary object markers and portable delineators required for the direction of public traffic through or around the work area during construction. After construction area signs are no longer required, they shall be removed.

3.02 COORDINATION WITH OTHERS

It is the responsibility of the Contractor to install and coordinate the traffic control plan with other contractors and utility companies working on adjacent roadways, businesses, and homes to avoid delays and conflicts to other projects (if any) and this project.

It is the responsibility of the Contractor to coordinate any and all communications with impacted utility companies prior and during construction.

3.03 LIMITATION ON WORKING HOURS

Contractor shall only implement traffic control and restrictions within the area that is estimated to be between 8:00 AM to 5:00 P.M, unless otherwise indicated or authorized by the Public Works Director. If night work is necessary, Contractor shall submit a request in writing to the Public Works Director at least two weeks in advance. Written request must highlight closest intersections that need to be on flashing red, start and end time of flashing red and dates. Notify the residents and businesses at least 48 hours prior to any construction during nighttime if approved by the Public Works Director. No extra pay or premium pay will be allowed for night work.

3.04 ACCESS TO PRIVATE PROPERTY

When construction work occurs within the City's right-of-way, provisions shall be made for the safe passage of vehicular and pedestrian traffic around the work area at all times.

Access to private residences and businesses shall be maintained at all times. When private driveways and entrances must be blocked for the completion of work, contractor shall make every effort to minimize the time it takes to complete such work, and shall notify the occupants/business owners and the City of the required access closures in accordance with Section 7-1.03 of the State Standard Specifications.

Before obstructing any private driveway entrance on public streets with equipment or other barriers, for any prolonged period, the Contractor shall notify the occupants of the property to allow for the removal of vehicles in accordance with the Section 3.10, "Parking Restrictions".

Contractor shall provide and maintain pedestrian access to and from the property with blocked access. During non-working hours, no driveway, house, or parking lot shall be denied access to a public roadway.

3.05 ROAD CLOSURES AND DETOURS

The contractor is required to keep one lane open in each direction of travel, at all times during construction except at Full-Depth Reclamation segment of roadway. The Contractor will be required to show how this requirement will be adhered to and implemented in the Construction Phasing and Traffic Control Plans required under Section 12-4 "Maintaining Traffic" of the State Standard Specifications.

Street closures will not be permitted.

The Contractor shall establish and maintain detours where applicable and conduct his construction operations in such a manner so as to minimize the hazard, inconvenience and disruption to the public. The Contractor shall direct and detour traffic through, around and adjacent to construction operations, as specified herein or in accordance with approved traffic control plans.

3.06 EMERGENCY VEHICLE ACCESS THROUGH DETOURS

During all detours the Contractor shall provide for the movement of emergency vehicles through the work area. When temporary traffic control is provided by flaggers they shall be instructed to give immediate passage to emergency vehicles that have activated their lights or sirens.

3.07 FLAGGERS

The Contractor shall employ flaggers as required for each specific detour and at all locations on the construction site where barricades and warning signs cannot control the movement of traffic. Where flaggers are required, they shall be logically placed in relation to the equipment or operation so as to give adequate warning and shall be placed in accordance with the Contract Documents, the CA MUTCD, and the approved Traffic Control Plan.

Flaggers shall utilize high-visibility, reflective safety apparel and hand-paddle signs at all times. Provide flaggers with two-way radios for communication when necessary. Red flags shall only be used for traffic control in emergency situations.

The Contractor shall pay fully the cost of furnishing all flaggers, including transporting flaggers, to provide for passage of public traffic.

3.08 NOTICE TO AGENCIES

The Contractor shall be responsible for keeping all affected agencies, businesses and residents informed of restrictions or limitations to either public or private roads caused by his operations, including but not limited to the City Police and Fire Departments, US Postal Service, Transit Services and Garbage Companies.

3.09 TRAFFIC CONTROL DURING NON-WORKING DAYS AND HOURS

The full width on the traveled way shall be open for public use on non-working days and hours, which are to be defined as Saturdays, Sundays, designated City holidays, after 3:00 p.m. on Fridays, the day preceding designated legal holidays, and when construction operations are not actively in progress.

The Contractor shall not be permitted to maintain any lane or road closure during non-working days and hours without first obtaining written approval of the Public Works Director. As necessary, the Contractor shall restore travel lanes to their original alignment and configuration by means of backfilling and placing temporary pavement or bridging with steel plates.

The fact that rain or other causes may force suspension or delay of the work shall not relieve the Contractor of his responsibility for maintaining traffic around the project and providing access as specified herein. The Contractor shall at all times keep on the job such materials and equipment as may be necessary to keep streets and driveways within the project area open to traffic and in good repair.

The work site shall be cleaned each day, to the satisfaction of the Public Works Director, in order to remove all traffic hazards. Daily traffic control shall continue to remain in place until cleanup activities have been satisfactorily completed and all of the Contractor's equipment has been removed from the traveled way.

3.10 PARKING RESTRICTIONS

Contractor shall furnish and distribute written notices to area residents and businesses in accordance with Section 7-1.03 "Public Convenience" of the State Standard Specifications.

The Contractor shall furnish and install "No Parking, Tow-Away" signs on the front and back of Type II barricade at least 72-hours prior to starting construction work in that area. Barricades shall be placed at distances along the roadway of no greater than 100-feet.

Should the construction work not occur on the specified day, new "No Parking – Tow Away" signs shall be posted by the Contractor indicating a revised date. The Contractor may schedule work for the following working day, however, the "No Parking, Tow-Away" signs must be dated and re-posted 72-hours in advance for the restriction to be enforceable.

PART 4 – MEASUREMENT AND PAYMENT

Included in Section 100 of these Technical Specifications.

END OF SECTION 103

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 104

STORMWATER POLLUTION PREVENTION

PART 1 – GENERAL

1.01 WORK INCLUDED

- A. Prohibit illicit discharge (non-rainwater) into the storm drain system.
- B. Construct any and all necessary systems to eliminate contaminants from entering the storm water system.
- C. Clean up and control of work site materials, spoils and debris.
- D. Removal of contaminants produced by the project.
- E. The work shall include the provision of all labor, materials, equipment and apparatus not specifically mentioned herein or noted on the plans, but which are incidental and necessary to complete the work specified.

1.02 APPLICABLE PUBLICATIONS

National Pollution Discharge Elimination system (NPDES) Permit No. CAS612008 – latest version

California Storm Water Best Management Practice Handbooks:

- 1. Municipal
- 2. Industrial/Commercial
- 3. Construction Activity

C.3 Stormwater Technical Guidance Ver 5.0, June 2016 or the latest version.

California State Water Resources Control Board, Construction General Permit CAS000002 Order No. 2010-0014 DWQ (for sites greater than one acre).

Section 13 “Water Pollution Control” of the State Standard Specifications.

1.03 QUALITY ASSURANCE

The Contractor shall designate an individual (to be approved by the City) available at all times of sufficient authority to halt work and implement BMPs and source control measures for the Contractor and all sub-contractors, suppliers, and other personnel that may be at the construction site(s), to prevent non-stormwater discharges from the construction site(s). This individual shall be the contact person for all matters of the project regarding non-stormwater discharges.

All work performed under this contract and all contractors and their associates and/or employees are required to comply with all applicable storm water regulations and to implement Best Management Practices (BMP's) at all times.

All employees and subcontractors shall be trained on the storm water pollution prevention requirements contained in these specifications. Training records shall be submitted to the City along with requests for progress payment.

A supply of spill clean-up materials such as rags or absorbents shall be kept readily accessible on-site.

1.04 ALLOWABLE DISCHARGES

Under current NPDES regulations, the following discharges to the storm drainage system are permitted, as long as the discharges are not significant pollutants:

1. Diverted stream flows, springs and natural drainage courses;
2. Rising flood waters;
3. Air conditioning condensation; and
4. Landscape irrigation.

Groundwater from dewatering and foundation drains will need additional certification that the groundwater has been tested or evaluated for the presence of pollutants subject to non-stormwater discharge regulations. In such a case, a Special Sewer Discharge Permit shall be required for the water to be discharged to the Sanitary Sewer System, as directed.

1.05 SUBMITTALS

The Contractor shall develop and implement a Water Pollution Control Plan (WPCP) which shall contain at a minimum the items included in this section. The WPCP shall show the locations of all storm drains, storm drain pipes, points of entry (catch basins, inlets, outlets), and other features through which stormwater flows. The WPCP shall include a protocol for allowing drainage to flow properly during rainfall events while still preventing non-stormwater discharges from entering the storm drains, creeks, and Bay. Work shall not begin without the Public Works Director completing its review and finding no exceptions taken on the WPCP and finding at Public Works Director' sole discretion that the WPCP meets the intent and goals of the project.

The WPCP shall include descriptions and sketches of all BMPs, show locations and describe protocols for implementing and maintaining the following BMPs for but not limited to material storage, dewatering operations, bypass pumping, saw-cutting operations, pavement operations, concrete operations, grading and excavation operations, spill prevention and control, vehicle and equipment cleaning, vehicle and equipment operation and maintenance, litter control, dust control, pavement cleaning, and construction waste management.

The WPCP shall be updated to meet changing stages of the construction site(s).

1.06 PENALTIES

The Contractor is responsible for penalties assessed or levied on the Contractor or the City as a result of his failure to comply with the provisions in this section including, but not limited to, compliance with the applicable provisions of the Manuals, and Federal, State, and local regulations and requirements as set forth therein. Penalties as used in this section shall include fines, penalties and damages, whether proposed, assessed, or levied against the Contractor or the County, including those levied under the Federal Clean Water Act and the State Water Quality Control Act, by governmental agencies or as a result of citizen suits. Penalties shall also include payments made or costs incurred in settlement for alleged violations of the Manuals, or applicable laws, regulations, or requirements. Costs incurred could include sums spent instead of penalties, in mitigation or to remediate or correct violations.

PART 2 – PRODUCTS

Materials used shall be in conformance with Caltrans's Construction Site Best Management Practices (BMPs) Manual, latest edition, or the CASQA Construction BMP Handbook, latest edition.

A supply of spill clean-up materials such as drip pans, rags, or absorbents shall be kept readily accessible on-site.

PART 3 – EXECUTION

3.01 RECYCLING

At the end of each working day, all scrap, debris and waste material shall be collected and materials disposed of properly.

Dry, empty paint cans/buckets, old brushes, rollers, rags and drop cloths shall be disposed of in approved waste collection.

Dumpsters shall be inspected for leaks. As leaks are detected, the trash hauling contractor shall be contacted to replace or repair dumpsters that leak.

Water from cleaning dumpsters shall not be discharged on-site.

Regular waste collection shall be arranged for before dumpsters overflow.

3.02 HAZARDOUS MATERIAL/WASTE MANAGEMENT/MATERIALS MANAGEMENT

Designated areas of the project site shall be proposed by the contractor for approval by the Public Works Director suitable for material delivery, storage and waste collection as far from catch basins, gutters, drainage courses and creeks as possible.

All hazardous materials such as pesticides, paints, thinners, solvents and fuels; and all hazardous wastes such as waste oil and antifreeze shall be labeled and stored in accordance with State and Federal regulations.

All hazardous materials and all hazardous wastes shall be stored in accordance with secondary containment regulations, and it is recommended that these materials and wastes be covered as needed, to avoid potential management of collected rain water as a hazardous waste.

The contractor shall dispose of all excess thinners, solvents, chemicals, oil-based and water-based paint as hazardous waste.

Regular hazardous waste collection shall be arranged for to comply with time limits on the storage of hazardous wastes.

Granular materials shall be stored a minimum of ten feet from the closest catch basin and curb return. The contractor shall not allow these granular materials to enter the storm drain or creek.

Warning signs shall be posted in areas containing or treated with chemicals.

An accurate up-to-date inventory, including Material Safety Data Sheets (MSDS) of hazardous wastes stored on site shall be kept and available to assist emergency response personnel in the event of a hazardous materials incident.

Maintenance and fueling of vehicles and equipment shall be performed in a designated, bermed area, or over a drip pan that will not allow run-off of spills. Vehicles and equipment shall be regularly checked and have leaks repaired promptly. Secondary containment, shall be used to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed or poured.

3.03 CHEMICAL USAGE

When rain is forecast within 24 hours, or during wet weather, the Public Works Director may prevent the contractor from applying chemicals in outside areas.

Pesticides or fertilizers shall not be over-applied and material manufacturer's instructions shall be followed regarding uses, protective equipment, ventilation, flammability and mixing of chemicals. Over-application of a pesticide constitutes a "label violation" subject to an enforcement action by

the San Mateo County Agriculture Commissioner.

3.04 DUST CONTROL

Use means necessary to control dust on and near the work, and on and near off-site areas, if such dust is caused by the Contractor's operations during performance of the Work, or if resulting from the condition in which the Contractor leaves the site.

Thoroughly moisten surfaces as required to prevent dust being a nuisance to the public, neighbors, and personnel performing other work on the site.

Use dust palliatives or reclaimed water (not potable water).

Reclaimed water shall be used to control dust on a daily basis or as directed by the Public Works Director.

At the end of each working day, or as directed by the Public Works Director, the roadways and on-site paved areas shall be cleaned and swept of all materials attributed to or involved in the work. Streets shall not be washed down into a storm drain or creek in lieu of street sweeping. Water wash may be picked up by a vacuum unit in lieu of sweeping.

3.05 SAWCUTTING

The contractor shall cover or barricade catch basins using control measures such as filter fabric, straw bales, sand bags and fine earthen dams to keep slurry out of the storm drain system. The contractor shall ensure that the entire opening is sealed.

Saw cutting debris and spoils be removed by shovel, absorption, vacuum or pick up of waste prior to moving to the next location or at the end of each working day, whichever is sooner.

3.06 DEWATERING OPERATIONS

Water shall be routed through a control measure as determined and approved by the Public Works Director such as a sediment trap, sediment basin or Baker tank to remove settleable solids prior to discharge to the storm drain system. Filtration of the water following the control measure may be required on a case-by-case basis.

The filtered water shall be reused for other purposes such as dust control or irrigation to the extent possible.

If the project is within an area of known groundwater contamination, the water from dewatering operations shall be tested prior to discharge. If the water meets the Regional Water Quality Control Board standards, it may be discharged into the storm drain. Otherwise, the water shall be treated and hauled off-site for proper disposal.

3.07 CONCRETE GROUT AND MORTAR WASTE MANAGEMENT

Concrete, grout and mortar shall be stored away from the drainage areas and ensure that these materials do not enter the storm drain system.

Concrete trucks shall not be washed out into streets, gutters, storm drains, drainage channels or creeks.

Concrete trucks and equipment shall be washed out off-site or in a designated area on-site where the water will flow onto dirt or into a temporary pit or bermed area. The water shall percolate into the soil and the hardened concrete placed in a waste container for disposal. If a suitable soil or

bermed area is not available on-site, the wash water shall be collected and removed off-site and disposed of properly.

Water created by the washing of exposed aggregate concrete finish shall be collected in a suitable dirt area or filtered through straw bales or equivalent material before entering the storm drain system. Sweepings from exposed aggregate finish shall be collected and disposed of in a waste container or removed off-site and disposed of properly.

3.08 PAVING OPERATIONS

No paving while it is raining.

During wet weather store paving equipment indoors or cover with tarp or other waterproof covering.

Place drip pans or absorbent materials under paving equipment when not in use.

Catch basins and manholes shall be covered when paving or applying seal coat, tack coat, slurry seal or fog seal.

The Public Works Director may direct the contractor to protect drainage courses by using control measures such as earth dike, straw bale and sand bag to divert run-off or trap filter sediment.

Excess sand (placed as part of a sand seal or to absorb excess oil) shall not be swept or washed down into gutters, storm drains or creeks. The sand shall be collected and returned to the stockpile or disposed of in a trash container or hauled to an approved dump site. Water shall not be used to wash down fresh asphalt concrete.

3.09 PAINTING

The cleaning of painting equipment and tools shall be performed in a designated area that will not enter the gutters, storm drains or creeks.

Excess paint shall be removed from brushes, rollers and equipment prior to cleanup.

Wash water from aqueous cleaning of water-based paint tools and equipment shall be disposed of in a sanitary sewer or onto a designated dirt area.

Paint thinners and solvents from oil-based paints shall be filtered and re-used when possible. Waste sludge, thinner and solvent from cleaning tools and equipment shall be disposed of as a hazardous waste.

3.10 SITE CLEANUP

The cleaning of equipment of materials shall not be performed on-site or in the street using soaps, solvents, degreasers, steam cleaning or equivalent methods.

All cleanup must be performed in a designated area that will not allow the cleaning rinse to flow off-site or into streets, gutters, storm drains, or creeks.

PART 4 - MEASUREMENT AND PAYMENT

Included in Section 100 of these Technical Specifications.

END OF SECTION 104

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 105

CONCRETE IMPROVEMENTS

PART 1 - GENERAL

Existing and new concrete facilities including, but not limited to, curb ramps, sidewalk, driveways, bulbouts, curb, and gutter.

All new curb ramps shall have detectable warning surfaces installed.

1.1 COORDINATION

Contractor shall notify the City 48 hours in advance of concrete removal.

At some locations, concrete repairs are specified to address damage due to tree roots and to comply with ADA guidelines. Contractor shall obtain approval from a licensed arborist prior to cutting, pruning or removing any tree roots while performing concrete repairs. Contractor shall apply root barriers prior to placing new concrete.

1.2 SUBMITTALS

The Contractor shall furnish a concrete mix design to the Engineer at least ten (10) working days prior to the start of the work.

PART 2 - MATERIAL AND EQUIPMENT

Concrete shall conform to the provisions of Section 90 of the Standard Specifications.

2.1 CONCRETE MIX DESIGN

The Contractor shall furnish a concrete mix design to the Engineer at least ten (10) working days prior to the start of the work, based on the following guidelines:

All concrete facilities shall be constructed with Class B, 5 Sack mix which meets the following requirements:

Compressive Strength:	3000 psi @ 28 days
Maximum Slump:	4 inches
Lamp Black:	1 lb. / cy

In addition, Polypropylene fiber reinforcement shall be added at the following rate:

General Concrete Facilities including curb, gutter, sidewalk, access ramps, etc. - 1.5 lbs/cy (0.01% by volume), 3/4 inch min. length.

Heavy Vehicular Facilities including cross gutters, spandrels, swales, and alley entrances - 3.0 lbs/cy (0.02% by volume), 1-1/2 inches min. length.

The Contractor shall be responsible for all costs associated with the required mix design. The Contractor shall comply with the "lamp black" color requirements.

2.2 DETECTABLE WARNING SURFACE

For curb ramp construction, detectable warning surfaces (DWS) shall be a cast in place style of truncated domes. No surface-applied matting systems (i.e. glued and screwed) style of DWS shall be allowed on new curb ramp construction.

For existing curb ramps and island passageways that are ADA compliant but require only a DWS, the DWS shall be cast in place style of truncated domes only. No surface-applied matting systems (i.e. glued and screwed) style of DWS shall be allowed.

The color of the DWS shall be yellow.

PART 3 - EXECUTION

3.01 GENERAL

All work shall conform to the provisions of Section 90 of the Standard Specifications. All handicap access ramps shall comply with Title 24 and current UBC requirements, as well as County Standard Details included herein.

Concrete removal work shall conform to the provisions in Section 15-1.03B, "Removing Concrete," of the State Standard Specifications and these Technical Specifications. The existing concrete shall be sawcut full depth prior to removal. Any concrete broken due to the Contractor's failure to comply with these requirements shall be removed and replaced at the Contractor's expense. All concrete removed shall become the property of the contractor to be disposed of outside the right of way, each day work occurs.

The line and grade of the replaced facilities shall conform to the existing facilities. In most instances, this will consist of a straight line between existing facilities. In instances where existingsidewalk has been raised by tree roots, the line and grade may be adjusted to avoid tree roots, as directed by the Engineer.

The Contractor shall flow line water test all repaired curbs and gutters, cross gutters, and other repaired drainage facilities in the presence of the City's Inspector.

Access ramps shall be constructed at intersections such that ramp landing falls within the limits of the striped crosswalk or just past the painted stop bar or limit line.

In situations where access ramp is retrofitted into existing sidewalk, removal and replacement for new ramp shall include sidewalk as well as adjacent curb and gutter.

In situations where an existing curb ramp is to remain, but to be retrofitted with detectable warning surface, the scope of work shall include sawcutting existing ramp surface, removing existing concrete, and replacing new concrete with truncated domes material set into new concrete. Surface applied matting systems for truncated domes (i.e. glued and screwed mats) shall not be allowed for retrofitting a detectable warning surface to an existing ramp.

3.02 PROTECTION OF EXISTING FACILITIES

The contractor shall protect existing facilities from damage, and discoloration from concrete splash. Adjacent concrete facilities shall be covered during concrete placement to prevent concretesplash and excess concrete from staining the adjacent concrete. After initial placement, strikeoff and finishing, the protection shall be removed and the adjacent concrete cleaned.

Vertical existing facilities such as light poles, walls, etc. shall be protected with plastic extending a minimum of three feet above the concrete surface. After initial placement, strikeoff and finishing, the protection shall be removed and the vertical surfaces cleaned.

Protect existing drain inlet and hood as specified on the plans. If damaged by the construction activities, the Contractor shall replace the drain inlet and hood in kind and no additional cost to the City.

3.03 SUBGRADE

After the sub-grade is prepared, moisture conditioned, and compacted to 95% relative compaction at zero to three percent over optimum moisture content, the Contractor shall continuously maintain the sub-grade in a uniform condition at the moisture content obtained during sub-grade compaction until the concrete is placed.

In locations where existing concrete improvements are being replaced, existing base material may be re-compacted and used without over excavation and placement of additional baserock. For new concrete improvements, over excavation and placement of base material in accordance with the City's Standard Details shall be required.

3.04 FORMING

Wooden forming shall be of two-inch nominal thickness staked at two foot intervals. The maximum gap at the bottom of the forms shall be 1-3/4 inches.

3.05 TOLERANCES

The maximum variation from design elevation shall not exceed +/- 0.02 feet. In some instances, particularly in critical drainage areas, tolerances may be reduced to zero. Concrete facilities shall be installed to maintain or provide positive drainage. Questions regarding applicable tolerances shall be directed to the Engineer forty-eight hours in advance of the work.

When shown on the drawings, the concrete shall be set at the design elevations. When existing facilities are to be removed and replaced, they shall conform to the existing elevations and grades. Generally, this will be at a straight line between the start and end points of the removal.

3.06 ADJUSTING UTILITY BOXES AND MANHOLES IN SIDEWALK AND RAMPS

Contractor shall refer to "Utility Structure Adjustments" Technical Specifications section.

Pull boxes located in ramp construction areas shall be replaced and set to finished grade.

3.07 PLACING AND FINISHING

The concrete shall be deposited on a moist grade in such a manner as to require as little re-handling as possible. Workmen shall not be allowed to walk in the freshly mixed concrete with boots or shoes coated with earth or foreign substances.

In general, adding water to the surface of the concrete to assist in finishing operations shall not be permitted.

Before final finishing is completed and before the concrete has taken its initial set, the edges shall be carefully finished with the radius shown on the plans or a radius to match the existing construction.

Concrete shall be thoroughly consolidated against and along the faces of all forms and adjacent concrete. After the forms are removed, excess concrete below the form surface shall be removed to be flush with the form face.

All new concrete shall match existing facilities in texture, color, and appearance. Surfaces shall be broom finished transversely to the line of pedestrian traffic. The Contractor shall clean at his

expense all discolored concrete. The concrete may be cleaned by abrasive blast cleaning or other methods approved by the Engineer. Repairs shall be made by removing and replacing the entire unit between scoring lines or joints.

3.08 CONCRETE PROTECTION

The Contractor shall always have materials available to protect the surface of the fresh concrete against rain. These materials shall consist of burlap, curing paper, or plastic sheeting. If plastic sheeting is used, it shall not be allowed to contact finished concrete surfaces.

The Contractor shall also protect the concrete against traffic and vandalism. If the concrete is damaged or vandalized, the Contractor shall make the necessary repairs at its own expense. The repair procedure for damaged or vandalized concrete shall be approved in advance by the Engineer.

3.09 CURING

Concrete shall be cured by protecting it against loss of moisture, rapid temperature change, and mechanical injury for at least three days after placement. White or clear liquid membrane compound shall be used. After finishing operations have been completed, the entire surface of the newly placed concrete shall be covered by the curing medium. The edges of the concrete exposed by the removal of forms shall be protected immediately to provide these surfaces with continuous curing treatment.

The concrete shall be allowed to cure for seventy-two hours prior to placing adjacent asphalt concrete.

3.10 JOINTS

Control joints shall be placed at a maximum spacing of ten feet.

Control joints in all PCC facilities, except sidewalks, shall be formed by tooling a deep joint or by using expansion joint material. If expansion joint material is used, a minimum of two 1/2 inch by 18 inch dowels shall be used with additional dowels placed every 24 inches.

Control joints in sidewalks may be made using a tooled joint which shall extend a minimum of 1/4 of the depth of the concrete and shall not be less than 1-1/2 inches in depth.

In sections of new curb and gutter adjacent to an existing tree, a deep joint shall be placed through the curb and gutter, aligned with the center of the tree trunk.

Expansion joints shall be required at a maximum of forty foot intervals on curbs, curbs and gutters, cross gutters, swales, and sidewalks. Expansion joints shall also be required on all corners of curbs, curbs and gutters, sidewalks, at the outside boundary of access ramps, and other locations with discontinuities or reentrant corners which may cause cracking.

3.11 CLEANUP AND BACKFILL

After the concrete is placed, cured, and the forms have been removed, the Contractor shall clean the site of all concrete and forming debris. The aggregate base shall be replaced to match the existing base and compacted to 95% relative compaction. The pavement shall be restored in accordance with the "4-inch Base Repair (Digouts)" Technical Specification section. A minimum of two lifts shall be used, none of which shall exceed three inches, and the top lift shall be a minimum of 1-1/2 inches thick. The total thickness of the restored pavement shall match that of the existing pavement.

For pavements to be overlaid or resurfaced, the aggregate base and asphalt concrete may be replaced with cement sand slurry in conformance with applicable County Standard Detail.

After curing has been completed and the forms have been removed from the new curb and gutter or sidewalk, the void between the new concrete and the existing parkway shall be filled with clean native material or imported topsoil and the entire parkway left in a clean and orderly condition.

For concrete removed but not replaced, the resulting void after excavation shall be backfilled with clean native material or topsoil.

3.12 DETECTABLE WARNING SURFACE (DWS)

All curb ramps shall have a detectable warning surface installed in conformance with the latest Caltrans Standards. The color of the DWS installed shall be YELLOW.

Existing curb ramps shall be removed in their entirety and replaced with a new ramp as identified on the project plans. A cast in place DWS product shall be installed at each new ramp, in conformance with these Technical Provisions. Locations for this work are identified on the project plans.

3.13 WATER VALVE LOCATING ENGRAVINGS

Contractor shall replace all water valve locating engravings located on the top and face of existing concrete curb that is to be removed and replaced. Engravings shall either be set/stamped into the finished concrete surface prior to curing, or engraved after the curing process.

The purpose of the engravings is to identify the location and offset of the existing water valves from the face of curb.

An arrow is engraved on the top of curb to point in the direction of the water valve being identified. The offset distance in feet from the face of curb shall be engraved in the face of curb in roman numerals. The engravings (arrows and roman numerals) shall be approximately 3" tall and a width of 1-2 inches.

After concrete has cured and engraving is placed, inside the engraving shall be painted blue. The paint shall only be placed within the engraved area and not on the surrounding flush concrete surface.

PART 4 - QUALITY ASSURANCE

Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

Only remove quantities of curb and gutter, sidewalk, and curb ramp that can be fully replaced with new improvements and opened to the public within five (5) calendar days.

Compressive strength and cement content for the class of Portland Cement Concrete herein designated shall be the minimum acceptable.

No concrete for concrete improvements shall be placed until the subgrade, the forms, and reinforcement have been approved.

4.01 CODES AND STANDARDS

Proportioning of Portland Cement concrete shall conform to the applicable provisions of Section 90-1.02F "Proportioning" of the State Standard Specifications.

Mixing and transporting of Portland Cement Concrete shall conform to the applicable provisions of Section 90-1.02G "Mixing and Transporting Concrete" of the State Standard Specifications.

Curing of Portland Cement Concrete shall conform to the applicable provisions of Sections 90-1.03B(3) "Curing Compound Method" of the State Standard Specifications.

Protection of Portland Cement Concrete shall be provided in conformance with the applicable provisions of Section 90-1.03C "Protecting Concrete" of the State Standard Specifications.

Forming of concrete for improvements shall conform to the provisions of Section 73-1.03C "Fixed Form Method" of the State Standard Specifications forming for cast-in-place structures shall conform to Section 51-1.03C(2) "Forms" of the State Standard Specifications.

Placing of concrete improvements shall conform to the provisions of Sections 73-2 "Curbs" and 73-3 "Sidewalks, Gutter Depressions, Island Paving, Curb Ramps, and Driveways" of the State Standard Specifications; placing of concrete for cast-in-place concrete structures shall conform to Section 51-1.03 "Construction" of the State Standard Specifications.

Finishing of cast-in-place concrete structures shall conform to the provisions of Section 51-1.03F "Finishing Concrete" of the State Standard Specifications. Finishing of concrete improvements shall conform to Section 73 of the Standard Specifications. Unless otherwise called for on the plans, all buried surfaces shall have "Ordinary Surface Finish" all exposed surfaces shall have "Class 1 Surface Finish".

Placing and splicing of steel reinforcement shall conform to the requirements of Section 52-1.03D "Placing" of the State Standard Specifications.

4.02 CERTIFICATIONS

At the time of delivery provide certificates of compliance signed by both Contractor and Supplier containing the following statements:

- a. Materials supplied comply with the specification in all respects.
- b. Proportioning and mixing is in compliance with a design mix which has been field tested in accordance with the herein requirements and produces the required compressive strength under like conditions.
- c. Statement of type and amount of any admixtures.
- d. All certificates shall include the Material and Supplier's mix design number.

At time of delivery provide certified delivery ticket stating volume of concrete delivered and time of mixing, or time of load-out in case of transit mixers.

4.03 JOB CONDITIONS

Admixtures shall not be used except upon the prior written permission of the Engineer and, if permitted, the concrete containing same will be subject to the same compliance testing as herein specified for the various classes of concrete.

Temperature of mixed concrete, immediately prior to placement, shall not be less than 50° F, nor more than 90°F. Aggregates and water shall be heated or cooled at the mixing plant by supplier as necessary to produce concrete within these limits. Neither aggregates nor mixing water shall be heated to exceed 150°F.

No additional mixing water shall be incorporated into the concrete during transport or after arrival at the work site unless such water is specifically authorized by the Engineer. If authorization to add mixing water is obtained and mixing water is added to the mix, the mixer drum shall then be revolved a minimum of thirty (30) revolutions.

Hand mixing of Portland Cement Concrete shall not be allowed except upon prior written approval. Where a portion of existing concrete improvements is to be reconstructed, the section to be removed shall first be a cut with an approved concrete saw to a minimum depth of one-half the depth of the existing concrete at the first score line beyond the area to be replaced.

Where concrete removal is required, it shall be removed to the nearest score line of joints. Prior to placing concrete for concrete structures, Contractor shall first secure approval of the forms and any required reinforcement.

4.04 QUALITY CONTROL

Do not commence placement of concrete until mix designs have been reviewed and approved by the Engineer.

4.05 SUBMITTALS

Within 14 calendar days after the Contractor has received the Notice to Proceed, the Contractor shall submit the concrete mix design for all items of work.

PART 5 -- PRODUCTS

5.01 AGGREGATE FOR PORTLAND CEMENT CONCRETE

Aggregates for Portland Cement Concrete shall conform to the requirements of Section 90-1.02C "Aggregates" of the State Standard Specification.

Unless otherwise specified or called for on the plans for the work, aggregate size and gradation for Portland Cement Concrete shall conform to the requirements of Section 90-1.02C(4)(d) "Combined Aggregate Gradation" of the State Standard Specifications for one inch (1") maximum combined aggregate.

5.02 WATER FOR PORTLAND CEMENT CONCRETE

Water for mixing and curing concrete and for washing aggregates shall conform to the requirements of Section 90-1.02D "Water" of the State Standard Specifications.

5.03 CEMENT FOR PORTLAND CEMENT CONCRETE

Cement for Portland Cement Concrete to be placed in roadway improvements such as curbs, gutters, walks, valley gutters, driveways, surface and subsurface pads or slabs shall be Type V or Type II (modified) cement conforming to the requirements of ASTM Designation C150, with the following modifications:

1. The cement shall not contain more than 0.60% by weight of alkalis, calculated as the percentage of Na₂O plus 0.658 times the percentage of K₂O when determined by either direct 4 intensity flame photometry or by the atomic absorption method. The instrument and procedure used shall be qualified as to precision and accuracy in accordance with the requirements of ASTM Designation C114.
2. The autoclave expansion shall not exceed 0.50%.

3. Mortar, containing the Portland Cement to be used and the sand, when tested in accordance with Test Method No. Calif 527, shall not expand in water more than 0.010% and shall have an air content less than 048%.
4. Allowable tri-calcium Aluminate (C3A) by weight shall not exceed 5%. Allowable tetracalcium aluminoferrite plus twice the tricalcium aluminate (C4AF+2C3A) by weight shall not exceed 25%. The sulfate expansion test (ASTM C452) may be used in lieu of the above chemical requirements, provided the sulfate expansion does not exceed 0.040% at 14 days (max).
5. The Contractor may substitute pozzolan for Portland Cement in amounts up to 15% of the required mix unless high early strength concrete is specified. Pozzolan shall consist of Class F fly ash meeting the requirements of ASTM C618.

Cement for Portland Cement Concrete to be placed in surface improvements shall contain a coloring compound equivalent to 1/4 pound of lampblack per cubic yard, added to the concrete at the central mixing plant.

Liquiblack, as supplied by Concrete Corporation of Redwood City, California, may be used in lieu of lampblack. One pint of liquiblack shall be considered equal to one pound of lampblack.

5.04 CLASSIFICATION OF PORTLAND CEMENT CONCRETE

Portland Cement Concrete shall be minor concrete conforming to the requirements of Section 90-2 "Minor Concrete" of the State Standard Specifications with at least 505 pounds of cementitious material per cubic yard and 1-inch maximum graded coarse aggregate. No bagged mix is permitted.

Portland Cement Concrete not conforming to the above classification or having required minimum compressive strengths other than those set forth above, shall conform to requirements to be set forth for same noted on the plans or detail drawings.

5.05 EXPANSION JOINT MATERIAL

Material for expansion joints in Portland cement concrete improvements shall be pre-molded expansion joint fillers of the thickness called for on the plans and conforming to the requirements of ASTM Designation D1751. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed. Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.

5.06 REINFORCEMENT AND DOWELS

Bar reinforcement for concrete improvements shall be deformed steel bars of the size or sizes called for on the plans conforming to the requirements of ASTM Designation A615 for Grade 60 bars. Size and shape for bar reinforcement shall conform to the details shown or called for on the plans.

Slip dowels, where noted or called for on the plans or detail drawings shall be smooth billet-steel bars as designated and conforming to the requirements of ASTM Designation A615 for Grade 60 bars. Ends of bars inserted in new work shall be covered with a cardboard tube sealed with cork; no grease or oil will be used.

Mesh for reinforcement for concrete improvements shall be cold drawn steel wire mesh of the size and spacing called for on the plans conforming to the requirements of ASTM Designation A82 for the material and ASTM Designation A185 for the mesh. Size and extent of mesh reinforcement shall conform to the details shown or called for on the plans.

Tie wire for reinforcement shall be eighteen (18) gauge or heavier black annealed conforming to the requirements of ASTM Designation A82.

Suppliers certificates showing conformance with this specification shall be delivered with each shipment of materials delivered to the job site.

5.07 ACCESSORY MATERIALS

Materials for water stops and other items required in the placement of Portland Cement Concrete shall conform to the applicable requirements of Section 51 of the State Standard Specifications unless otherwise specifically noted or called for on the plans or detail drawings.

Curing compound for use on exposed surfaces of Portland Cement Concrete shall be "Non-Pigmented Curing Compound - chlorinated Rubber Base-Clear" conforming to the requirements contained in 90-1.03B(3) "Curing Compound Method" of the State Standard Specifications.

5.08 MATERIAL FOR FORMS

Material for forms for cast-in-place concrete shall conform to the requirements of Section 51-1.03C(2) "Forms" of the State Standard Specifications.

5.09 CONCRETE FOR CURBS/GUTTERS, CURB RAMPS, VALLEY GUTTERS

All concrete shall conform to the applicable County Standard Drawings and Specifications unless otherwise specified herein. In addition, the Concrete mix shall have 1" maximum combined aggregate grading.

Portland cement: ASTM C150 Type I or II. 6-sacks cement minimum per cubic yard, 2 pints of liquid lampblack, per cubic yard.

Water shall be clean, free from injurious amounts of oil, alkali, organic matter or other deleterious material. 6 gallons water maximum per sack cement.

Aggregate: ASTM C33 - clean, hard, durable, uncontaminated, washed, graded, cleaned and screened. Crusher run or bank run gravel will not be permitted.

The concrete mix for the replacement of concrete street slabs and valley gutters shall conform to Section 105.

All concrete shall have a slump of 3" to 4" and shall obtain at least 3500 psi strength at 28 days. Concrete mix shall be such that the new concrete structure can be opened to vehicular traffic within three (3) calendar days from the time of placement without damaging the new concrete.

Lamp black content shall be of an approved quality mixed at the rate of two (2) pints of liquid per cubic yard of concrete for curb & gutter, sidewalks, and curb ramps.

5.10 AGGREGATE BASE

Aggregate Base shall be Class II and conform to the applicable requirements set forth in the San Mateo County Standard Drawings

5.11 TOP SOIL

Soil to be used in planter areas between curbs and sidewalks shall be fertile, well-drained, of uniform quality, free from stones over 1" diameter, sticks, oils, chemicals, plaster, concrete, and other deleterious materials.

Top soil shall conform to Caltrans Standard Specifications, Section 20- 2.01.

5.12 DETECTABLE WARNING SURFACES (TRUNCATED DOME)

All curb ramps shall have a detectable warning surface installed in conformance with the latest Caltrans Standards. The color of the DWS installed shall be YELLOW.

Existing curb ramps shall be removed in their entirety and replaced with a new ramp as identified on the project plans. A cast in place DWS product shall be installed at each new ramp, in conformance with these Technical Provisions. Locations for this work are identified on the project plans.

PART 6 -- EXECUTION

GENERAL

The demolition of the existing curb and gutter, sidewalk, and curb ramps shall proceed as detailed in Section 105 Concrete Improvements of these Specifications.

The Contractor shall lower or replace any water service lines encountered while excavating or grading for the sidewalk and curb & gutter work as directed by the Engineer. Any gas service lines encountered shall be relocated by the City's Utility Operation Division.

The Contractor shall place a minimum of four (4) inches of Class 2 aggregate base beneath new concrete improvements unless otherwise stated in these Project Specifications. Excavate, re-grade, provide, and install additional base material as necessary to obtain four (4) inches minimum in areas where existing improvements are being removed. Before placing new base or replacing existing material, sub-grade material shall be compacted to minimum of 90% relative compaction. The base material shall be compacted to a minimum of 95% relative compaction as determined by ASTM Tests D1557, D2922 and D3017.

Forms shall be checked and approved by the Engineer or City Inspector before any placement of concrete.

Dowel new concrete into existing concrete with ½"-diameter, 12"-long dowels at two feet on center, epoxied and embedded six inches. At expansion joints and at end of pours, use ½"-diameter, 12"-long dowels, smooth and capped, to tie into adjacent concrete. Dowel holes shall be drilled into the existing sidewalk or curb without causing damage.

Concrete shall not be placed when air temperature is below 40 °F or during rain or within two hours before sunset. No on-site mixing of concrete shall be allowed.

Concrete shall be placed and compacted in forms without segregation. After placement, the concrete shall be consolidated sufficiently to produce a dense mass, struck off and floated. Final finishing operations shall not proceed until all bleed water has evaporated from the surface. Sprinkling of dry cement to absorb excessive surface moisture shall not be allowed. The surface texture of finished concrete shall conform to adjacent concrete. Forms shall not be removed less than twenty-four hours after the concrete has been placed. In no event shall forms be removed while the concrete is sufficiently plastic to slump.

As soon as the concrete is set, it shall be cured for a period of at least 72 hours by spraying with an accepted pigmented impervious membrane curing compound.

The Contractor shall restore any landscaping, irrigation system, and special surface treatments encountered in the execution of this Work to a condition equivalent or better than that which existed prior to the commencement of this Work. The above shall include but not be limited to:

- Brickwork

- Landscaping and irrigation systems
- Painting of curbs if a designated color exists, such as a "red zone"

The Contractor shall notify residents of driveway closures due to concrete construction per Section 103 Traffic Control of these Specifications. After excavation, the Contractor shall provide temporary access to the driveways for residents during weekend or holiday periods if the forms have not been set, by either placing aggregate base or by utilizing steel plates.

The Contractor shall protect all completed Work from damage. All discolored concrete shall be cleaned to a uniform color. Repairs and cleaning of new concrete shall be at the expense of the Contractor.

The Contractor shall compact all new asphalt concrete, base material, and topsoil related to the concrete work described herein according to the Specifications. All costs for furnishing, placing and compacting these materials shall be included in the price for the Work.

The Contractor shall ensure that the site is left in a safe condition from loose lumber, nails, etc.

All sidewalk, curb and gutter, curb ramp, and entrance walks to be removed and replaced are as shown on the Plans.

All concrete shall be placed against existing sawcut concrete or 2" thick wood forms. When pouring new gutters, 12 inches of adjacent pavement shall be removed beyond the lip of gutter to allow for the placement of forms. No concrete shall be placed against asphalt or spalled, chipped or broken concrete.

At locations where new curb ramps are to be installed, 12 inches of adjacent pavement shall be removed at the lip of gutter to allow for the placement of forms.

The Contractor shall temporarily plug the gap between existing pavement and new concrete structures with cut back asphalt or asphalt concrete before opening the concrete structure to the public. Before the final paving, the plug material between existing pavement and new concrete structure shall be removed completely. The subgrade material shall be compacted to 95% relative compaction, then the gap shall be paved back with material in kind.

All existing expansion joints shall be replaced in the valley gutters, curb and gutter. Expansion joints shall be placed at right angles to the curb line and extend through the entire thickness of the concrete. Concrete adjacent to expansion joints shall be finished with an edger tool. Contraction joints, scored a minimum of 1 ½" shall be constructed at intervals not to exceed 20 feet in the sidewalk, curb and gutter. The width of contraction joints shall not exceed 1/8", and the edges of contraction joints shall be finished with a "T" bar. All joints shall be scored at right angles to the curb line. Score marks shall be uniform with those in the adjacent concrete. All score marks shall be ¼" in depth, and left in a cleanly rounded condition.

The Contractor shall stamp the name of the street on top of the curb, at the location where the street name was removed as part of the concrete removal and replacement.

The Contractor shall check grades to ensure drainage at every corner return where new curb and gutter and curb ramps are installed. Finished areas with drainage problems shall be removed and replaced at the expense of the Contractor.

Curb ramps shall have a detectable warning surface that extends the full width and 3 feet depth of the curb ramp. The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline. Curb ramps with raised truncated domes shall conform to Caltrans

Standard Plans Curb Ramp Detail No. A88A and Caltrans Standard Specifications. Refer to the County's Standard Drawings for other curb ramp details.

For retrofit curb ramp conditions, the location of the truncated dome panel shall be approved by the Engineer prior to installation. Adhere to the manufacturer's installation instructions. The Contractor shall grind the area to receive the detectable warning surface to make the finished surface flush with the surrounding surface. The area shall be cleaned of dust and debris before installation of the detectable warning surface.

6.01 STRUCTURAL EXCAVATION

Structural excavation may be either by hand, or by machine and shall be neat to the line and dimension shown or called for on the plans. Excavation shall be sufficient width to provide adequate space for working therein, and comply with CAL-OSHA requirements.

Where an excavation has been constructed below the design grade, the bottom of the excavation shall be backfilled to grade with approved material and compacted in place to 95% of the maximum dry density.

Surplus excavation material remaining upon completion of the work shall be either removed from job site, or conditioned to optimum moisture content and compacted as fill at the site.

6.02 BRACING AND SHORING

The Contractor shall furnish, place and maintain such bracing and shoring as may be required to support the sides of the excavations for the proper protection to workmen; to facilitate the work; to prevent damage to adjacent structures or facilities. Upon completion of the work, all bracing and shoring shall be removed, unless otherwise directed.

The Contractor is solely responsible for all bracing and shoring and shall, if required, submit an application and supporting data for an effective shoring system to the Engineer. The Engineer may forward the application to the California Division of Industrial Safety for design, assumed soils conditions, and the estimation of forces to be resisted, together with plans and specifications of the materials and methods to be used. The application shall be prepared by a Civil Engineer registered in California. No excavation around cast-in-place concrete structures shall proceed until the Contractor has received the return of an approved application, if required.

Contact City Engineer if Shoring in Bay Mud Conditions.

6.03 FORMS FOR CONCRETE

Concrete improvements shall be formed with a smooth and true upper edge and the side of the form shall be placed next to concrete with a smooth finish. Forms shall be constructed or made rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.

All forms shall have been thoroughly cleaned prior to placement and shall be coated with an approved form oil sufficient to prevent adherence of concrete prior to placing.

Forms shall be carefully set to the alignment and grade established and shall conform to the required dimensions. Forms shall be rigidly held in place by stakes set at satisfactory intervals. Sufficient clamps, spreaders and braces shall be installed to insure the rigidity of the forms.

Forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs shall be equal to the full depth of the concrete as shown, noted or called for on the plans or detail drawings. Composite forms made up from benders or thin planks of sufficient ply to ensure rigidity of the form in the shape required may be used on curves and curb returns.

No concrete shall be placed until the Engineer has inspected and approved the forms and subgrade. Concrete is subject to rejection without approval by the Engineer.

6.04 PLACING STEEL REINFORCEMENT

Bars shall be free of mortar, oil, dirt, excessive mill scale and scabby rust and other coatings of any character that would destroy or reduce the bond. All bending shall be done cold, to the shapes shown on the plans. The length of lapped splices shall be as follows:

Reinforcing bars No. 8, or smaller, shall be lapped at least 45 bar diameters of the smaller bar joined, and reinforced bars Nos. 9, 10, and 11 shall be lapped at least 60 bar diameters of the smaller bars joined, except when otherwise shown on the plans.

Splice locations shall be made as indicated on the plans.

Reinforcement shall be accurately placed as shown on the plans and shall be firmly and securely held in position by wiring at intersections and splices and by using precast mortar blocks or ferrous metal chairs, spacers, metal hangers, supporting wires, and other approved devices of sufficient strength to resist crushing under applied loads. Supports and ties shall be such as to permit walking on reinforcing without undue displacement.

Reinforcing shall be placed so as to have the following minimum concrete cover:

- Surfaces exposed to water 4"
- Surfaces poured against earth 3"
- Formed surfaces exposed to earth or weather 2"
- Slabs, walls, not exposed to weather or earth 1"

Minimum spacing, center of parallel bars shall be two and one half (2-1/2) times the diameter of the larger sized bar. All reinforcing shall be securely tied in place prior to pouring concrete. Placing of dowels or other reinforcing in the wet concrete is not permitted.

6.05 MIXING CONCRETE

All concrete shall be transit mixed in accordance with the requirements of ASTM Designation C94. Transit mixed concrete shall be mixed for not less than ten (10) minutes total, of which not less than three (3) minutes shall be on the site just prior to pouring. Mixing shall be continuous with no interruptions from the time the truck is filled until the time it is emptied. Concrete shall be placed within one hour of the time water is first added.

Hand mixing of concrete for use in concrete structures will not be permitted.

6.06 PLACING CONCRETE

Subgrade shall be thoroughly wetted prior to the placing of concrete for all concrete placed directly on soil. All standing water shall be removed prior to placing of concrete.

No concrete shall be placed until the subgrade and the forms have been approved.

Concrete shall be conveyed from mixer to final location as rapidly as possible by methods preventing separation of the ingredients. Deposit concrete as nearly as possible in final position to avoid re-handling.

Concrete shall be placed and compacted in forms without segregation by means of mechanical vibration or by other means as approved by the Engineer. Vibration shall continue until the material is sufficiently consolidated and absent of all voids without causing segregation of material. The use of vibrators for extensive shifting of fresh concrete will not be permitted.

All control and construction joints shall be as shown on the plans.

Concrete in certain locations may be pumped into place upon prior approval. When this procedure requires redesign of the mix, such redesign shall be submitted for approval in the same manner as herein specified for approval of design mixes.

6.07 FORM REMOVAL

Forms shall be removed without damage to concrete. All forms below the ground surface, together with all shores and braces, shall be removed before backfilling.

Backfill against concrete shall not commence until the concrete has developed sufficient strength to prevent damage.

Forms with cast-in-place walls shall remain in place at least 72 hours after pouring.

Forms with suspended slabs shall remain in place at least 28 days after pouring.

Edge forms shall remain in place at least 24 hours after pouring.

6.08 EXPANSION JOINTS

Expansion joints incorporating pre-molded joint fillers shall be constructed at twenty (20) foot intervals in all concrete curbs, gutters and sidewalks, and at the ends of curb returns. At each expansion joint, one-half by twelve inch (1/2" x 12") smooth slip dowels shall be installed in the positions shown or noted on the detail drawings.

Slip dowels shall be oriented at right angles to the expansion joint and shall be held firmly in place during the construction process by means of appropriate chairs.

Expansion joints and slip dowels shall be constructed in valley gutters and driveway approaches in the positions indicated or called for on the detail drawings.

6.09 CONTROL JOINTS

Control joints shall be constructed in concrete curbs, gutters, walkways and pavements between expansion joints at ten (10) foot intervals throughout, or as shown on the plans. Depth of joint score shall be a minimum of one-fourth (25%) the thickness of the concrete.

6.10 FINISHING

Concrete curb and gutter shall be finished in conformance with the applicable requirements of Section 73-1.04 and 73-1.05A of the State Standard Specifications as modified herein.

Where monolithic curb, gutter and sidewalk is specified, separate concrete pours will not be allowed.

Horizontal surfaces shall receive a medium broom finish unless otherwise shown.

New work shall match existing in finish, score pattern, and color.

6.11 ROADWAY ACCESSORY CONSTRUCTION

Concrete walkways, island paving, valley gutters and driveway approaches shall be formed, placed and finished in conformance with the applicable requirements of Sections 73-2 "Curbs" and 73-3

“Sidewalks, Gutter Depressions, Island Paving, Curb Ramps, and Driveways” of the State Standard Specifications as modified herein.

Where new concrete curb and gutter is to be constructed against existing AC remove 12” of the AC to form new gutter lip. Patch pave after gutter form is removed.

6.12 CONNECTING TO EXISTING CONCRETE IMPROVEMENTS

Whenever new curb, gutter, or sidewalk is to connect to existing improvements to remain, sawcut to existing sound concrete at the nearest score line or expansion joint. Drill and insert 1/2" diameter by 12" long dowels at 24" on center into existing improvements. Install pre-molded expansion joint filler at the matching joint.

A “cold” joint to the existing curb, gutter or sidewalk is not permitted.

6.13 FIELD QUALITY CONTROL

Finish subgrade for concrete improvements shall be subject to approval prior to placement of forms.

No concrete shall be placed prior to approval of forms.

Appearance and finish of all concrete improvements constructed shall not contain "bird baths" or pond water and shall be smooth and ridge free.

Finish grade at top of curb, flow line of gutter, and the finish cross section of concrete improvements shall conform to the design grades and cross sections.

Variation of concrete improvements from design grade and cross section as shown or called for on the plans shall not exceed the tolerances established in Sections 73-1.05 and/or 73-1.06 of the State Standard Specifications, as applicable.

6.13 RESTORATION OF EXISTING IMPROVEMENTS

Existing pavement or other improvements removed or damaged due to the installation of concrete improvements shall be replaced in kind.

Existing landscaping or planting removed, damaged or disturbed due to the installation of concrete improvements shall be replaced in kind.

6.14 CLEANUP

Surplus material and debris remaining upon completion of the work shall be segregated as to type, and transported from the job site and disposed of in a legal manner.

END OF SECTION 105

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 106

ASPHALT CONCRETE GRINDING

PART 1 - GENERAL

Work covered by this section includes “cold planning” operations of existing pavement. Work shall be in conformance with Section 39-3.04 of the State Specifications and the County Standard Specifications as modified herein.

PART 2 - MATERIAL AND EQUIPMENT

Grinding shall be performed with abrasive grinding equipment utilizing diamond cutting blades. Except on structures, the entire area of pavement in locations designated shall be ground. Removal by heater planning shall not be allowed.

Due to multiple street segment locations across the City, the Contractor shall have a minimum of one power sweeper with vacuum for each grinder.

PART 3 - EXECUTION

3.01 GENERAL

The depth, width and shape of the cut shall be as indicated on the plans or as directed by the Engineer. All tapered or otherwise non-vertical edges must be saw cut or jack hammered to provide a straight, vertical edge. The final cut shall result in a uniform surface conforming to the plans. The underlying pavement surface to remain in place shall not be damaged in any way.

The material planed from the roadway surface, including material deposited in existing gutters or on the adjacent traveled way, shall be immediately removed from the site of the work and disposed of, unless otherwise directed by the Engineer. All material removed by grinding, including pavement fabric (if present), shall be cleaned up and legally disposed of outside of the City limits. Recycling of the material is encouraged in compliance with the City recycling ordinance. Contractor shall place and maintain warning signs and temporary AC patch material to serve as “ramps” at all pedestrian and vehicular crossings over entire length of grinding. Final overlay of milled surfaces shall occur no later than seven (7) calendar days after the completion of grinding operations.

The Contractor shall notify the Engineer immediately upon discovering pavement fabric and anytime that the limits of the fabric are reached so that the Engineer can measure limits properly.

Care shall be taken to avoid damage to adjacent improvements including adjacent asphalt surfacing that is to remain in place. The Contractor shall be responsible for the cost of repairing damage to any facility caused by the grinding operations. Loops and/or wiring intended to be saved but damaged by the Contractor during grinding operations shall be replaced at his expense. The Contractor shall protect all existing valve covers and other existing structures during the grinding operation.

WORKING HOUR RESTRICTIONS - To insure that the roadway will be opened in time so as not to impact peak traffic, all grinding operations shall be shut-down and cleared for traffic by 3:00 pm each day, unless a later time is allowed, at the sole discretion of the Engineer, based upon his assessment of how long clean-up and temporary AC conforms will take. Engineer shall be given two (2) hours notice for request review and approval/disapproval.

Any utility covers compromised and in need of replacing, during the grinding operation, shall be brought to the immediate attention of the Engineer.

Contractor shall protect monument markers within the street monument boxes during grinding. Any damage to monument markers within the monument boxes during grinding shall be repaired at the expense of the Contractor with no additional expense to the City.

Contractor shall use sweeper to mitigate dust during grinding operations.

PART 4 - MEASUREMENT AND PAYMENT

Included in Section 100 of these Technical Specifications.

END OF SECTION 106

SECTION 107

HMA PAVING

PART 1 – GENERAL

1.01 SUMMARY

This work includes producing and placing hot mix asphalt (HMA) using the STANDARD process, comply with Section 39, “Hot Mix Asphalt,” of the latest State Standard Specifications except where modified herein.

Work covered by this section includes digout and repair of failed asphalt concrete pavement.

Submit Job Mix Formulas (JMF) and JMF production testing results.

1.02 SUBMITTALS

Contractor shall submit certificates from materials suppliers stating compliance with the requirements of this Section.

1.03 COORDINATION

At some locations, base repairs are specified to address damage due to tree roots. Contractor shall obtain approval from a licensed arborist prior to cutting, pruning or removing any tree roots while performing base repairs.

PART 2 – MATERIALS

2.01 AGGREGATE

Asphalt concrete shall be Type A conforming to the 1/2 inch maximum size aggregate for base courses and 1/2 inch maximum for surface courses as specified in Section 39-1.02E, “Aggregate” of the State Standard Specifications. Paving completed in a single lift placement shall be constructed with 1/2 inch maximum size aggregate for HMA.

Asphalt concrete used for “Leveling Courses” shall be Type A conforming to 3/8 inch maximum, medium surface courses, as specified in Section 39-1.02E, “Aggregate” of the State Standard Specifications.

Asphalt concrete used for base repair shall be Type A, 1/2 inch maximum, medium graded aggregate material conforming to Section 39, State Standard Specifications.

2.02 ASPHALT BINDER

Asphalt binder to be mixed with the aggregate shall conform to the provisions of Section 92 of the State Standard Specifications and shall be paving asphalt grade PG 64-10, unless otherwise directed by the Engineer. The amount of asphalt binder to be mixed with the aggregate shall be determined by the supplier in accordance with the requirements of California Test 367. The mix design, job mix formula and certificate of compliance for the asphalt binder shall be submitted for approval at least 10 working days prior to the start of work.

2.03 ASPHALT TACK COAT

Tack coat (paint binder) shall conform to the requirements of Section 94, “Asphaltic Emulsions” of the State Specifications for Grade SS-1h, CSS-1h, QS-1h, or CQS-1h.

PART 3 – EXECUTION

3.01 GENERAL

The surface of the pavement to receive asphaltic concrete shall be swept clean of all soil, vegetation and debris with a self propelled pick-up street broom machine immediately prior to placement of the asphalt tack coat.

Asphalt concrete shall be spread with an asphaltic paving machine. Paving machine shall be self-propelled mechanical spreading and finishing equipment provided with an automatic screed control.

Compaction shall be obtained by approved means to obtain the specified density and surface finish to the lines, grades and cross section shown on the plans. Asphalt concrete shall be compacted to a minimum 92 percent of the maximum theoretical density.

Where the total thickness of asphalt concrete to be placed is greater than 3 inches it shall be placed in lifts conforming to Sections 39-1.10 "Spreading and Compacting Equipment" of the State Standard Specifications. Asphalt concrete for base repair shall be placed and compacted in two layers. The final layer shall not be less than one and one-half (1-1/2) inches in compacted thickness nor more than three (3) inches. Spreading and compacting of asphalt concrete shall conform to the applicable provisions of Section 39 of the State Standard Specifications. The width of the compaction equipment should be narrow enough to fit within the repair area.

Installation of leveling course shall be conforming to Section 39-1.11 "Transporting, Spreading, and Compacting" of the State Standard Specifications.

Pavement joints are to be at the lane line locations wherever possible. Pavement joints shall not be placed in travel lanes. The automatic screed control shall include a mobile grade reference (ski type), or equivalent and provision for automatic control of transverse slope. Longitudinal paving joints at the end of paving shifts shall be avoided, unless approved by the Engineer. The Contractor shall schedule his paving operations such that each layer of asphalt concrete is placed on all contiguous lanes of a traveled way each work shift. At the end of each work shift, the distance between the ends of the layers of asphalt concrete on adjacent lanes shall not be greater than 10 feet nor less than 5 feet. Additional asphalt concrete shall be placed along the transverse edge at the end of each lane and along the exposed longitudinal edges between adjacent lanes, hand raked, and compacted to form temporary conforms. Kraft paper, or other approved bond breaker, may be placed under the conform tapers to facilitate the removal of the taper when paving operations resume.

At road connections designated by the Engineer, additional asphalt concrete surfacing material shall be placed and hand raked, if necessary, and compacted to form smooth tapered connections. The Contractor is further advised that it will be his responsibility to assure that the existing drainage patterns are to be maintained at all locations or as directed by the Engineer.

The area to which tack coat has been applied shall be closed to public traffic. Care should be taken to avoid tracking binder material onto existing pavement surfaces beyond the limits of construction.

Asphalt concrete surfacing shall be placed on all existing surfacing shown on the plans, unless otherwise directed by the Engineer.

The locations of failed areas needing digout repair shall be marked in the field by the Contractor, as noted on plans. The City shall approve and/or modify the location of each marked pavement area prior to allowing the Contractor to proceed with pavement digout removal.

Asphalt concrete shall be removed to a total depth as shown on plan from the top of grinded

surface. Digouts shall be completed after the full road width grind operation. If saw-cutting is used to repair failed areas it shall be performed with a diamond saw blade along the dimensions indicated, extending the entire depth of the existing asphalt concrete.

If a cold milling machine (grinder) is used, payment will be made for the actual square footage of base repaired, not exceeding the limits marked by the Engineer. The Contractor shall provide vertical edges on all sides of the digout area prior to placement of HMA. Contractor shall saw cut any grinder rolled edges, if needed, and remove the necessary AC to create the required vertical edges.

The material grindings from the roadway surface, including material deposited in existing gutters or on the adjacent traveled way, shall be immediately removed from the site of the work and disposed of, unless otherwise directed by the Engineer. All material removed by grinding, including pavement fabric (if present), shall be cleaned up and legally disposed. Recycling of the material is encouraged in compliance with the City recycling ordinance. All materials removed from repair areas shall be legally disposed of outside the City limits.

Base repair work shall not commence unless the ambient temperature is above 50 degrees F and has not been below 35 degrees F during the previous twelve (12) hours. Prime or tack coats shall not be applied when the surface to be coated is wet or contains an excess of moisture. The temperature of asphalt concrete shall not be less than 250 degrees F during initial spreading.

Any utility covers compromised and in need of replacing, during the paving operation, shall be brought to the immediate attention of the Engineer.

Traffic shall not be allowed on the HMA pavement until final rolling operations are completed, and pavement temp is below 160°F.

3.02 TOLERANCE

The finished surface of the asphalt pavement shall conform to the smoothness tolerances as stipulated in Section 39-1.12D "Smoothness Corrections" of the State Standard Specifications. Areas of pavement which fail to meet smoothness tolerances shall be repaired by fine surface grinding at no additional cost to the City. Should the methods and equipment furnished by the Contractor fail to produce a layer of asphalt concrete conforming to the requirements, including straightedge tolerance, of Section 39 of the State Specifications, the paving operations shall be discontinued and the Contractor shall modify his equipment or furnish substitute equipment which will produce the desired results.

At the discretion of the Engineer, the asphalt concrete may be tested for thickness based on the same cores taken for compaction to determine if pavement thickness conforms to the nominal thickness specified in the contract. The allowable deviation for pavement thickness shall be plus or minus (\pm) one-eighth (1/8) inch. All core holes shall be filled with mortar with the top two (2) inches compacted with hot asphalt or Hydro mix. Cold asphalt or cutback will not be allowed.

3.03 TESTING

Field compaction testing will be provided by the City. Contractor shall be responsible for retesting as required.

All tests identified in Section 39 of the Standard Specifications for the STANDARD construction process of HMA shall be completed by an independent, third party, testing laboratory/contractor.

The independent, third party, testing laboratory determines the percent of maximum theoretical density from density cores taken from the final layer or full layer thickness if placed in single layer, whichever is applicable. Take three (3) density cores for every 500 tons or once per day of

HMA/RHMA placed, whichever is less. The Engineer determines a deduction for percent of maximum theoretical density based on the average of three density cores using the reduced payment factors in the following table:

Reduced Payment Factor for Percent of Maximum Theoretical Density

HMA Type A and B and RHMA-G percent of maximum theoretical density	Reduced payment factor	HMA Type A and B and RHMA-G percent of maximum theoretical density	Reduced Payment Factor
92.0	0.0000	97.0	0.0000
91.9	0.0125	97.1	0.0125
91.8	0.0250	97.2	0.0250
91.7	0.0375	97.3	0.0375
91.6	0.0500	97.4	0.0500
91.5	0.0625	97.5	0.0625
91.4	0.0750	97.6	0.0750
91.3	0.0875	97.7	0.0875
91.2	0.1000	97.8	0.1000
91.1	0.1125	97.9	0.1125
91.0	0.1250	98.0	0.1250
90.9	0.1375	98.1	0.1375
90.8	0.1500	98.2	0.1500
90.7	0.1625	98.3	0.1625
90.6	0.1750	98.4	0.1750
90.5	0.1875	98.5	0.1875
90.4	0.2000	98.6	0.2000
90.3	0.2125	98.7	0.2125
90.2	0.2250	98.8	0.2250
90.1	0.2375	98.9	0.2375
90.0	0.2500	99.0	0.2500
<90.0	Remove and Replace	>99.0	Remove and Replace

Testing of hot mix asphalt shall comply to the testing requirements identified in the "Hot Mix Asphalt" Technical Specifications section.

3.04 DAMAGE REPAIR

The Contractor shall be responsible for any damage to existing curbs, gutters, sidewalks and driveways and any asphalt concrete, liquid asphalt or asphaltic emulsion stains occurring during the course of this Contract. Such damage shall be cleaned by a method satisfactory to the Engineer. The cost of repairing this damage shall be considered as included in the unit price paid for asphalt concrete and no additional compensation shall be allowed.

3.05 PUBLIC CONVENIENCE AND STAGING

Schedule paving operations such that each layer of asphalt concrete is placed on all contiguous lanes of a traveled way each work shift. At the end of each work shift, the distance between the ends of the layers of asphalt concrete on adjacent lanes shall not be greater than 10 feet nor less than 5 feet.

Place additional asphalt concrete along the transverse edge at the end of each lane and along the

exposed longitudinal edges between adjacent lanes, hand raked, and compacted to form temporary conforms. Kraft paper, or other approved bond breaker, may be placed under the conform tapers to facilitate the removal of the taper when paving operations resume.

A drop-off of more than 0.15-foot will not be allowed at any time between adjacent lanes open to public traffic.

3.06 WORKING HOUR RESTRICTIONS

To insure that the roadway will be opened in time so as not to impact peak traffic, all paving operations shall be shut-down by 3:00 pm each day, unless a later time is allowed, at the sole discretion of the Engineer, based upon his assessment of how long the completion of AC plugs and clean-up will take.

PART 4 - MEASUREMENT AND PAYMENT

Included in Section 100 of these Technical Specifications.

END OF SECTION 107

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 108

SLURRY SEAL

PART 1 - GENERAL

1.01 WORK INCLUDED

Work shall consist of furnishing and placing an application of Slurry Seal.

The work shall include providing aggregate and asphalt binder, spreading and compacting the mixture, to the lines, grades, and dimensions shown in the Contract Documents.

Slurry Seal shall conform to the provisions of Section 37-3, "Slurry Seals and Micro-Surfacings", of the State Standard Specifications and to these Technical Provisions.

1.02 SUBMITTALS

The Contractor shall provide a Certificate of Compliance for Asphalt Binders, Emulsion, and Screenings and other materials used under this Section in conformance with the requirements of the Contract Documents.

The Contractor shall provide a Certificate of Compliance for Slurry Seal Asphalt Emulsion and Aggregate and other materials used under this Section in conformance with the requirements of the Contract Documents.

Contractor shall provide the Public Works Director with certified weight tickets furnished at the time of delivery to the inspector in the field.

Submittals shall conform to the provisions of Section 37-3.01A(3) "Submittals", of the State Standard Specifications.

PART 2 - MATERIAL AND EQUIPMENT

2.01 AGGREGATE

Aggregate for slurry seals shall be Type II as specified in Section 37-3.01B(2), "Materials", of the State Standard Specifications. Aggregates shall be black in color. The use of gray or light-colored aggregate will not be allowed.

2.02 ASPHALT BINDERS

Asphalt Binder shall conform to the provisions of Section 92, "Asphalt Binders", of the State Standard Specifications and shall be paving asphalt Performance Grade PG 64-10 in conformance to Section 92-1.02(B) of the State Standard Specifications, unless otherwise directed by the Public Works Director.

Asphalt Binder shall be Polymer Modified Asphalt Emulsion Seal coat conforming to Section 37-3.02B (3) of the State Standard Specifications unless otherwise directed by the Public Works Director. The spread rate shall be between 0.55-0.65 gal/SY.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

Pavement markers and thermoplastic pavement stripes or markings shall be removed by grinding or other means acceptable to the Public Works Director prior to beginning work.

Complete street closures are not permitted. Contractor must make provisions to allow minimum of one 11-foot-wide lane of traffic open in each direction and provide one driveway access to each affected property at all times during working hours. Contractor must stage accordingly and may not initiate larger areas than can be constructed and reopened in a given day.

3.02 APPLICATION

The contractor is responsible for implementing measures as needed to allow for work to proceed during cold weather, should it occur.

Slurry seal shall be placed in accordance with Section 37-3.02C(4), "Placement", of the State Standard Specifications.

Existing pavement surfaces shall be clean and dry prior to application of the slurry seal. The mixture shall fill all minor cracks, depressions or low areas and leave a uniform surface free from ruts, humps, depressions, or irregularities. Any ridges, indentations, or other objectionable marks left in the surface shall be eliminated by rolling or other means.

Only place slurry seal if both the pavement and the air temperature are at least 50 degrees F and rising. Do not place slurry seal if either the pavement or the air temperature is below 50 degrees F and falling. The expected high temperature must be at least 65 degrees F within 24 hours after placement. Do not place the slurry seal if rain is imminent or the air temperature is expected to be below 36 degrees F within 24 hours after placement.

The mixture shall be of the desired consistency upon leaving the mixer. A sufficient amount of mixture shall be carried in all parts of the spreader at all times so that complete coverage is obtained. No lumping, balling, or unmixed aggregate shall be permitted. No streaks such as caused by oversize aggregate shall be left in the finished pavement.

Longitudinal joints must correspond with lane lines. Longitudinal and transverse joints must shall comply with Section 37-3.01C(5) of the State Standard Specifications. All excess materials shall be removed from surfaces upon completion of each run.

Squeegees shall be used to spread the mixture in areas not accessible to the mixer/spreader. Care shall be taken to leave no unsightly appearance from handwork.

Slurry seal shall be spread uniformly at a rate of ten (10) to fifteen (15) pounds of dry aggregate per square yard, in accordance with the recommendations of the laboratory preparing the mix design. The exact spread rate may be adjusted by the Public Works Director depending on field conditions. The completed spread shall be within ten (10) percent of the specified rate. The spreader box shall be pulled at a rate NOT GREATER THAN 270 FEET PER MINUTE. The mixture must be uniform and homogeneous after spreading, and there must not be separation of the emulsion and aggregate after setting. The finished surface must be smooth.

Spread slurry seal in full lane widths. Do not overlap slurry seal between adjacent lanes more than 3 inches.

At limits of work, start or finish, 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 mixture shall be removed and disposed of by the Contractor after application of the slurry seal.

Existing utility covers shall be protected and covered by building paper or other approved material. Such paper and any excess mixture shall be removed and disposed of by the Contractor after application of the slurry seal.

Edge limits of the work on both sides of the street shall be maintained in a neat, straight, and uniform line. Slurry seal application shall extend to the gutter lip. In the event that the work extends onto the gutter more than one (1) to two (2) inches or is not in a neat, straight, uniform line, it will be the Contractor's responsibility to remove all excess mixture from the gutters using an appropriate method. Any runs or drips that spill onto any concrete surface shall be removed the same day that the spill occurs. All work associated with the removal of mixture from the concrete surfaces shall be conducted at the Contractor's expense.

Following application of the slurry seal, the Contractor shall protect the work from any traffic that may cause damage to the finished surface or result in tracking of the material until such time as the material has sufficiently cured. Within 1 hour after placement, the slurry seal must be set enough to allow traffic. Slurry seal must not exhibit distress from traffic such as bleeding, raveling, separation, or other distress.

Once the slurry seal has cured and is open to traffic, any excessive raveling of the aggregate from the mixture shall be swept up by the Contractor and the surface maintained until such time as the raveling ceases. This requirement for sweeping shall apply to both roadway surfaces and adjacent sidewalks/pedestrian facilities.

A sand blotter shall not be used.

The completed surface shall be thoroughly compacted, smooth, and free from ruts, humps, depressions, or irregularities. Any ridges, indentations or other objectionable marks left in the surface by blading or other equipment shall be eliminated by rolling or other means. The use of any equipment that leaves ridges, indentations, or other objectionable marks in the surface shall be discontinued, and acceptable equipment shall be furnished by the Contractor.

3.03 ROLLING

Slurry seal on all streets shall be rolled by a self-propelled, 10-ton pneumatic roller with a tire pressure of 50 PSI, equipped with a water spray system. All tires shall be smooth surfaced and inflated to the same pressure.

The surfaced areas shall be subjected to a minimum of two (2) full coverage passes by the roller or until the material is compacted to a uniform surface.

Rolling shall not commence until the slurry seal has cured enough so that it will not pick up on the tires of the roller, but no more than twenty-four (24) hours after placement.

3.04 STREET SWEEPING

The Contractor shall provide all necessary equipment, skill, and manpower to sweep all completed slurry sealed streets to the satisfaction of the Public Works Director, and in accordance with these Technical Specifications. Sweeping shall not begin until a sufficient bond has developed between the emulsion and the aggregate. Sweeping shall not dislodge aggregate or patches of applied surface.

The Contractor shall use a commercial sweeper to sweep each street that is slurry. During the sweeping, the sweeper shall use only the rear broom. The front brooms shall not be used during this sweeping operation. Brooms shall be vertically adjustable so as to avoid excess pressure during sweeping.

For slurry seal streets, the initial sweeping shall be performed no sooner than three (3) calendar days after the slurry seal has been applied to the street. The Contractor shall conduct additional sweepings at seven (7) calendar days and again at fourteen (14) calendar days after the slurry seal has been applied. A final sweeping shall be performed no sooner than twenty-eight (28) days and no later than forty-two (42) days following the slurry seal application. The Contractor shall submit a schedule of the dates for sweeping. The sweeping schedule shall be approved in advance by the Public Works Director.

Sidewalks and driveways adjacent to slurry sealed streets shall also be swept and kept clean of aggregates or other materials resulting from the application operation.

3.05 TEMPORARY PAVEMENT DELINEATION

Temporary pavement delineation shall be furnished, placed, maintained and removed in accordance with the provisions in Section 12-3.01, "General", of the State Standard Specifications and these Technical Provisions. Nothing in these Technical Provisions shall be construed as to reduce the minimum standards specified in the Manual of Traffic Controls published by the Department of Transportation.

All work necessary, including any required lines or marks, to establish the alignment of temporary pavement delineation shall be performed by the Contractor. Surfaces to receive temporary pavement delineation shall be dry and free of dirt or loose material. Temporary pavement delineation shall not be applied over existing pavement delineation or other temporary pavement delineation. Temporary pavement delineation shall be maintained until superseded or replaced with a new pattern of temporary pavement delineation or permanent pavement delineation.

Temporary pavement markers and removable traffic type tape which conflicts with a new traffic pattern or which is applied to the final layer of surfacing or existing pavement to remain in place shall be removed when no longer required for the direction of public traffic, as determined by the Public Works Director.

Whenever lane lines and centerlines are obliterated, the minimum lane line and centerline delineation to be provided shall be temporary reflective raised pavement markers placed at longitudinal intervals of not more than 24 feet. The temporary reflective raised pavement markers shall be the same color as the lane line or centerline markers replaced.

Temporary reflective raised pavement markers shall be placed in accordance with the manufacturer's instructions and shall be cemented to the surfacing with the adhesive recommended by the manufacturer, except epoxy adhesive shall not be used to place pavement markers in areas where removal of the markers will be required.

3.06 MIXING AND SPREADING

Mixing and Spreading shall conform to provisions of section 37-3.01C(3) "Mixing and Spreading Equipment", of the State Standard Specifications.

PART 4 - MEASUREMENT AND PAYMENT

Included in Section 100 of these Technical Specifications.

END OF SECTION 108

SECTION 109

INTER-AGENCY CONTACT INFORMATION

WEB SITES, ADDRESSES, AND TELEPHONE NUMBERS

Web Sites, Addresses, and Telephone Numbers

Refer ence or agen cy or	Web site	A d d r e s s	Teleph on e no.
Veolia Water	https://www.eastpaloaltowater.com/pages/about/about-veolia/	2415 UNIVERSITY AVE., EAST PALO ALTO, CA 94303	(650) 325 6 1 9 5
Califor nia Depart ment of In d us tri al R el ati o ns	www.dir.ca.gov	455 GOLDEN GATE AVENUE SAN FRANCISC O CA 94102	
CalTrans , Traffic Operatio ns, California Manual of Uniform Traffic Control Devices	http://www.dot.ca.gov/trafficops/camutcd/		
CalTran s, 2018 Standar d Plans and	http://dot.ca.gov/des/oe/construction-contract-		
East Palo Alto Sanitary District	www.epasd.com	901 WEEKS STREET EAST PALO ALTO , CA 94303	(650) 325- 9021
Menlo Park Fire			

Protecti on District			
Palo Alto Park Mutual Water Comp any	www.papmwc.org	2190 Addison Avenue, East Palo Alto, CA 94303	(650) 322- 6903
City of East Palo Public Work s Engin eerin g	http://www.ci.east	PW-ENGINEERING DIVISION 1960 TATE ST., EAST PALO ALTO, CA 94303	(650) 853- 3 1 8 9
Undergroun d Service Alert	www.usanorth.org		8 1 1 (800) 227-

END OF SECTION 109

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 110

MINI-ROUNDBABOUT

PART 1 – GENERAL

1.01 WORK INCLUDED

The mini-roundabout work includes removal of material, asphaltic pavement grinding, reinforcement, dowels, forming, rolled curb, asphalt concrete, landscaping, and concrete placement as indicated in the Plans.

All labor, planting, materials, supplies, tools and transportation to perform all operations in connection with construction complete in-place as indicated in the Plans. The contractor shall maintain the landscape improvements for plant establishment.

Damage to the street resulting from construction activities shall be repaired to the satisfaction of the City Engineer.

1.02 SUBMITTALS

The General Contractor shall submit the concrete mix design and strength data to the Engineer for favorable review prior to starting the work of this bid item.

Contractor shall provide a list of plants, materials and name and addresses of all plant suppliers and growers prior to performing any work.

Supplier's certificates showing conformance with this specification shall be delivered to the Engineer with each shipment of materials delivered to the job site. The installation of rolled curb shall comply with the State standards and State Standard Specifications.

PART 2 – MATERIAL AND EQUIPMENT

2.01 MATERIALS

See Specifications Section 105 "Concrete Improvements" for Concrete material requirements

See Specifications Section 107 "HMA Paving" for Asphalt material requirements

- Strength of concrete shall be 4,000 psi at 28 days.
- Bar reinforcement to be ASTM A615, Grade 60.
- Asphaltic emulsion shall be applied to the surface of existing pavements preparatory to concrete placement, and to all concrete surfaces which will be in contact with hot mix asphalt surfacing. Asphalt emulsion shall be - SS-1H. The Contractor shall submit a copy of Certificate of Compliance for asphaltic emulsion
- Install landscape planting with 3" mulch over 15" backfill planting pit.

Planting

1. Bioretention soil mix: Commercially available 'loamy sand' bioretention soil meeting percolation requirements with clay content up to 10% of mix. 'Lyngso Biotreatment Soil' as available from Lyngso Garden Materials, 650.364.1730 or approved equivalent.
2. Planting soil mix: Sandy loam amended with compost. 'General Landscape Soil' as available from American Soil and Stone, 510.292.3000 or approved equivalent.
3. Compost, UCC certified locally sourced and processed organic compost. Z-Best Organic Compost as available from Zanker Road Recycling Facility, 408.846.1577, or approved equivalent.

4. Mineral mulch, 3/8" diameter decomposed granite, no fines, color: Gold. Tuscany Gold Pathway Rock as available from American Soil and Stone, 510.292.3000 or approved equivalent.
5. Filter fabric, 8 oz non-woven filter fabric suitable for general landscape use.
6. Sheet mulch, recycled E-flute cardboard, as available through Supply, 800.237.3103, or approved equivalent.

PART 3 – EXECUTION

Mountable curb shall be formed, placed and finished in conformance with the applicable requirements of Section 73 of the State Standard Specifications as modified herein.

See Bid Item A-12 – Concrete Sidewalk

See Bid Item A-14 – Hot Mix Asphalt (Type A) for Asphalt material requirements

Planting

Within forty five (45) days after award of the Contract, submit to Engineer a complete list of materials proposed to be furnished and installed demonstrating conformance with the requirements specified.

Submittal to include invoices identifying sizes and quantities and the names and addresses of all plant material suppliers and growers.

Reviews: The Contractor shall specifically request the following reviews prior to progressing with the work:

1. Plant material approval.
2. Substantial completion.
3. Final completion.

Notify Engineer immediately of any discrepancy.

Plant Establishment

The contractor shall maintain the landscape improvements for a plant establishment period of 180 days. Note that this period of 180 calendar days is not included the number of working days set forth in the Notice to Bidders. The 180 days of plant establishment will begin at the acceptance of the installation.

PART 4 – MEASUREMENT AND PAYMENT

Included in Section 100 of these Technical Specifications.

END OF SECTION 110

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 111

STRIPING AND SIGNAGE

PART 1 – GENERAL

1.01 WORK INCLUDED

The work shall consist of placing pavement striping, markings, and raised pavement markers, placing temporary markers and painting curbs at the locations shown on the project plans and in accordance with the Contract Documents to the dimensions and details shown in the Caltrans Standard Plans, latest edition. Nothing in this Section shall relieve the Contractor from his responsibilities as provided in Section 7-1.04, "Public Safety", of the State Standard Specifications.

Work shall also consist of grinding existing thermoplastic striping and legends where shown on plan, at conform locations.

Construction Signage must be fabricated consistent with the requirements listed in this section and will include placement and updates as needed.

Supplying all labor, materials, equipment, and apparatus not specifically mentioned herewith or noted on the plans, but which are incidental and necessary to complete the work specified.

1.02 SUBMITTALS

Contractor shall submit certificates from the suppliers stating compliance of the materials with the requirements of this section.

PART 2 - MATERIAL AND EQUIPMENT

2.01 TEMPORARY PAVEMENT MARKERS (FLOPPIES)

Short term, temporary pavement markers shall be day/night retro reflective raised pavement markers conforming to the requirements of Section 84 of the State Standard Specifications and the CA MUTCD.

2.02 THERMOPLASTIC STRIPES AND MARKING

The thermoplastic material shall conform to State Specification PTH-02SPRAY, PTH-02HYDRO or PTH-02ALKYD with a minimum skid friction value of BPN = 35.

Glass beads to be applied to the surface of the molten thermoplastic material shall conform to the requirements of State Specification 8010-22L-22 (Type II), or AASHTO Designation: M 247 (Type 1). Copies of State Specification 8010-22L-22 are available at the State of California Transportation Laboratory, Sacramento, California.

Stencils for pavement markings shall be US customary units (English), in accordance with the State Standard Plans.



2.03 PAINT STRIPES AND MARKINGS

Paint material to be used for striping and pavement markings shall conform to Section 84-2 "Traffic Stripes and Pavement Markings" of the State Standard Specifications.

2.04 CONSTRUCTION SIGN DETAILS

Sign per details below:

96"

<h2 style="margin: 0;">Project Name</h2>	
<p>Project Description:</p> <p>Funding:</p> <p>Estimated Start Date:</p> <p>Estimated End Date:</p> <p>City Website Project Link:</p>	
	<p>Contractor Information and 24-Hour Contact</p>

48"

2.05 ADHESIVES

Adhesive for pavement markers shall be either rapid set epoxy or hot melt bituminous adhesive conforming to the requirements of Section 85 of the State Standard Specifications.

2.06 RAISED PAVEMENT MARKERS

Pavement markers shall be of the type called for in the Contract Documents and shall conform to the requirements of Section 84-2 "Traffic Stripes and Pavement Markings" of the State Standard Specifications and the CA MUTCD. All pavement markers shall be plastic. Ceramic markers will not be allowed.

2.07 REFLECTORIZED MARKERS

Retro reflective markers shall be of the size and type designated on the plans and shall conform to the requirements of Section 8 of the State Standard Specifications. Mounting hardware shall conform to the requirements of Section 81-3.02C "Retroreflective Pavement Markers" of the State Standard Specifications.

2.08 CURB PAINTING

Curb paint shall be of a latex base consisting of color in accordance with County Standards.

2.09 SURFACE MOUNTED DELINEATORS

Delineators shall surface mount delineators with multi-hit, omni-directional, and self-righting. The base of the delineator shall not exceed 7-inches. The delineator shall be mounted via anchor bolts or via epoxy.

2.10 TRAFFIC SIGN PANELS

Materials shall be in conformance with Section 82, "Signs and Markers" of the State Standard Specifications and the CA MUTCD, except that all materials will be supplied by the Contractor.

All signs shall be fabricated from high tensile alloy aluminum with reflective smooth finish. Sign panels shall be a minimum of 0.080-inch-thick, cut to size and shape with a tolerance of 1/32 inch. Panels shall be flat and free of buckles, warps, dents, burrs and any other defects resulting from fabrication.

All signs are to be of Diamond grade reflectivity.

Sizes for signs in the street, or signs that serve both bicyclists and vehicles, shall be as required for "Conventional Roads" as defined in Part 2, "Signs," of the CA-MUTCD.

2.10 TRAFFIC SIGN FASTENERS AND POSTS

Posts for signs shall be 1-3/4" Square galvanized 14 Gauge Steel Signposts with perforations.

Fasteners for posts shall be straight bolts for conventional sign installation and square post system corner-bolts for back to back installation.

2.11 SIGN FOUNDATION

Post foundations shall use concrete as defined in Section 108 "Concrete Improvements" of these Technical Specifications, where required as shown on plan.

2.12 CONSTRUCTION SIGNAGE

Construction signage at the project site shall include the following:

- Minimum size of 48"x96"
- Project name
- City logo
- Grant funding source (if applicable)
- General project timeframe (shall be updated if schedule changes)
- 24-hour project contact phone number

PART 3 – EXECUTION

Permanent striping and markings shall be completed within fourteen (14) calendar days of each road's paving or paving treatments.

Completed traffic stripes and pavement markings shall have clean and well-defined edges without running or deformation shall be uniform, straight on a tangent alignment, and on a true arc on a curved alignment. The width of completed traffic stripes and pavement markings shall not deviate in dimensions as specified in Section 81-3.02C of the State Standard Specifications.

3.01 REMOVAL OF EXISTING MARKING AND MARKERS

Before obliterating any pavement delineation or markings that are to be replaced in the same direction, the Contractor shall document and reference the existing pavement delineation and markings with sufficient control points to reestablish their alignment.

Existing pavement markings, markers, buttons, and striping shall be removed and disposed of as required by the Contract Documents and as directed by the Public Works Director. Removal shall be performed in such a manner so as to leave the existing pavement undamaged. Should the removal process leave a divot of more than 1/4-inch-deep, each divot shall be repaired with an approved bituminous adhesive.

Waste from removal of yellow painted traffic stripe may contain lead chromate. Residue produced when yellow paint is removed may contain heavy metals in concentrations that exceed thresholds established by the California Health and Safety Code and may produce toxic fumes when heated. As such, when grinding or other methods approved by the Public Works Director are used to remove yellow painted traffic stripes, the removed residue, including dust, shall be collected and contained immediately. The Contractor shall submit a written work plan for the removal, storage, and disposal of yellow painted traffic stripe to the Public Works Director for approval not less than 15 days prior to the start of the removal operations. Removal operations shall not be started until the Public Works Director has approved the work plan.

3.02 TEMPORARY PAVEMENT MARKERS (FLOPPIES)

If permanent pavement markers cannot be installed immediately after resurfacing, short-term temporary retro reflective pavement markers shall be installed prior to opening the street to traffic. Temporary markers shall be monitored, maintained and replaced by the contractor as necessary until such time that permanent striping can be applied.

Temporary pavement markers shall be placed not more than 12-feet apart on curves nor more than 24-feet apart on straight segments, in the quantity and appropriate colors to delineate centerlines (two yellow markers spaced 3-inches apart) and travel lanes (single white marker). Edge lines, median lines and bike lanes need not be marked.

3.03 LAYOUT AND CAT-TRACKING

No permanent striping or application of pavement markers shall occur until after the Contractor has field marked and established a satisfactory alignment and layout for the proposed striping (cat-tracking) and this alignment has been approved by the Public Works Director.

Cat tracking shall consist of stretching a rope on a straight line between control points on tangent alignment and on a true arc through control points on curved alignment and placing spots of paint along the rope.

The City shall have the right to make changes in the location and alignment of line stripes. Striping and traffic markings shall not be applied until approval is granted by the Public Works Director. The Contractor shall allow a minimum of three working days for review of the layout by the City.

3.04 THERMOPLASTIC STRIPES AND MARKING

Thermoplastic stripes and markings shall be hot applied in conformance with the manufacturer's recommended instructions and the applicable requirements of Section 84-2.03C(2) of the State Standard Specifications.

Thermoplastic material shall be applied only to dry pavement surfaces and only when the pavement surface temperature is above fifty degrees (50°) Fahrenheit. The thermoplastic material shall be applied to the pavement at a temperature between 400 degrees (400°) Fahrenheit and 425 degrees (425°) Fahrenheit.

A primer, of the type recommended by the manufacturer shall be applied to all pavement surfaces over 6-months old. The thermoplastic material may be applied by either spray or extrusion method in a single uniform layer.

Thermoplastic material for both pavement markings and traffic stripes shall be applied at a thickness of 0.100 to 0.150 inch. Glass beads shall be applied immediately to the surface of the molten thermoplastic material at a rate not less than eight pounds per hundred square feet (8 lbs/100 sf).

The contractor shall not place pavement markings and markers on any manhole, valve, anode, detector handhole, or monument rim and cover. For lane striping, placement of markings or markers shall discontinue on the rim and cover and shall continue along the same alignment, as shown in the drawings. Any cover marked during the construction of the project shall be restored to its original condition or replaced, in kind, at the contractor's expense.

3.05 PAINT STRIPES AND MARKINGS

Paint is to be applied in conformance with the manufacturer's recommended instructions and the applicable requirements of Section 84-2.03C(3) of the State Standard Specifications.

3.06 ADHESIVES

The portion of the street surface, which will receive the pavement markers or delineators, shall be free of dirt, oil, moisture, or any other material that would adversely affect the bonding of the adhesive.

Adhesive shall be placed in sufficient quantity to completely cover the bottom of the marker or delineator with no voids and with slight excess after the marker has been pressed into place. The marker or delineator shall be protected against impact until the adhesive has hardened.

3.07 RAISED PAVEMENT MARKERS

Pavement markers shall be installed in conformance with the requirements of Section 84, "Markers" of the State Standard Specifications.

The pavement markers shall be stored indoors and shall be protected from any source of moisture both during shipment and at the job site.

Pavement markers shall not be applied to new asphalt concrete surfacing or seal coats until the street surface has been opened to traffic for a period of not less than 7 days when hot melt bituminous adhesive is used, and not less than 14 days when epoxy adhesive is used.

Markers shall be installed accurately to the dimensions established in the Contract Documents and in an alignment approved in the form of Cat-Tracking by the Public Works Director.

3.08 REFLECTORIZED MARKERS AND DELINEATORS

ReflectORIZED markers and delineators shall be installed in conformance with the requirements of Section 81 "Miscellaneous Traffic Control Devices" of the State Standard Specifications.

ReflectORIZED markers and delineators shall be installed accurately at the locations called for in the Contract Documents or as required by the CA MUTCD.

The Contractor shall furnish and install a blue reflective marker for every fire hydrant.

3.09 CURB PAINTING

The temperature during application shall not be less than 50 degrees Fahrenheit. Curb shall be dry at least two days prior to application. Unless otherwise directed by the Public Works Director, existing curb and median island painting shall be repainted within the project limits, and all curb painting eliminated as a result of new curb and gutter improvements shall be restored.

3.10 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS

The Contractor shall protect the newly installed pavement markers and thermoplastic stripes from damage until the material has cured or sufficiently hardened. Contractor shall replace any broken, misaligned or otherwise disturbed markings, prior to opening the roadway to traffic.

Existing signs or other markings removed or damaged due to the installation of roadway striping shall be replaced in kind. Existing landscaping or planting removed damaged or disturbed shall be replaced in kind.

3.11 CLEAN-UP

Upon completion of the installation of striping, the Contractor shall thoroughly clean the work site of all waste, rubbish, construction debris, drips, over-spray, improper markings and/or layout paint markings and tracked thermoplastic material; all of which shall be removed immediately from the pavement surface by methods approved by the Public Works Director.

3.12 SIGN REMOVAL & RELOCATION

The Contractor shall remove the signs to be relocated from the existing sign posts. All signs to be relocated shall have the posts removed and be disposed of by the Contractor. The Contractor shall install new posts and attach the existing signs to the new posts/poles.

Existing signs that are to be relocated shall become the property of the Contractor. If undamaged (as determined by the Public Works Director), the signs shall be thoroughly cleaned, and may be reused in the work. If not reused, they shall be disposed at the Contractor's expense and new signs shall be furnished by the Contractor and installed in accordance with County Standards.

3.13 NEW SIGN

All sign types, locations and offsets shall be approved by the Public Works Director prior to installation and shall be installed as shown on the Drawings, unless otherwise detailed or directed by the Public Works Director. Construction and panel installation shall be per Section 82 of the State Standard Specifications. Sign panels shall be level and sign posts shall be plumb.

Where required, sign posts shall be set at least 30-inches into the ground and encased in concrete poured against undisturbed earth, with a minimum thickness of 6-inches of concrete at any point.

Sign posts for street signage shall be per the State Standard Specifications and the State Standard Plans. Signs shall be placed to have a minimum height of 7-ft as measured from the finished ground elevation to the bottom invert of the sign.

All sign locations shall be field verified by the Public Works Director prior to excavation for the sign foundation.

PART 4 - MEASUREMENT AND PAYMENT

Included in Section 100 of these Technical Specifications.

END OF SECTION 111

THIS PAGE LEFT INTENTIONALLY BLANK

SECTION 112

UTILITY STRUCTURE ADJUSTMENTS

PART 1 - GENERAL

1.01 GENERAL

The work performed in connection with adjusting various existing facilities shall conform to the provisions in Section 15, "Existing Highway Facilities," of the State Standard Specifications and these Technical Specifications. Work covered by this section includes adjusting utility frames, and covers to grade to match new roadway pavement grades.

Work covered by this section also includes:

- Survey (total station or GPS) recording and documenting of all utility cover locations within the pavement rehabilitation limits prior to grinding operations.
- Potholing and coordination with appropriate utility companies
- After paving operations, utilizing survey equipment again to relocate and mark the utility cover locations based on the recordings.

The purpose of the locating and surveying of utility covers is to prevent excess AC patch work during the "Utility Structure Adjustment" operation.

This project requires lowering of existing utilities prior to pavement grinding and adjustment to finished grade after paving.

Contractor shall be responsible for notifying and coordinating with the respective utility regarding any adjustment to affected utility structures within the limits of work. Contractor shall contact affected utilities within seven (7) calendar days from award of contract to allow for adjustment of their impacted utilities.

Any utility covers compromised and in need of replacing shall be brought to the immediate attention of the Engineer.

1.02 LIQUIDATED DAMAGES

Asphalt concrete around the raised utility shall be placed and compacted within twenty four (24) hours of raising the utility. Specific liquidated damages for utility adjustment delays shall be in the sum of one hundred dollars (\$100) per calendar day per location.

PART 2 - MATERIAL AND EQUIPMENT

Topographic Survey equipment (such as total station equipment) or GPS equipment shall record the location of the utility covers to the accuracy of within 4 inches of the center of the utility cover.

Equipment and methods shall be approved by the Engineer prior to execution.

PART 3 – EXECUTION

3.01 UNDERGROUND SERVICE ALERT

The Contractor shall notify and coordinate the work of identifying and marking utility facilities with the respective utility companies. The Contractor is required to call Underground Service Alert (USA) at (800) 227-2600 forty-eight (48) hours in advance of any excavation activity so all existing underground facilities can be located and marked. The Contractor shall supply the Engineer with

copies of all USA confirmation numbers including associated documentation.

3.02 SURVEYING

The Contractor shall survey and record the locations of all utility covers and provide the Engineer with records.

After paving operations, the Contractor shall locate the utility covers using the survey equipment and mark the locations of the utility covers prior to "Utility Structure Adjustment" operations.

3.03 CONTROL

All reset frames and covers shall be within 1/4 inch of the bottom of a straight edge when placed across manhole, box or other facility on the finished pavement.

Contractor shall be responsible for locating and referencing all such facilities so that no utility cover is "lost". Refer to the "Locating and Surveying Utilities" Technical Specification section.

For monuments, Contractor shall be responsible for preserving the survey point in its undisturbed position by a method acceptable to the Engineer.

3.04 ADJUST FRAMES, COVERS, GRATES, AND MANHOLES

All manholes, grates, valves, cleanouts and survey monuments shall be adjusted to finished grade in accordance with Section 15-2.10 of the State Standard Specifications.

Adjustment of covers shall begin within seven (7) days after paving.

Raising to grade of non-City utilities shall be coordinated with the appropriate utility company. Utility companies shall be notified a minimum of fifteen (15) days prior to the start of work.

In road areas where milling or conform grinding occurs ahead of the pavement overlay, the contractor shall lower the lids, grates and remove boxes prior to grinding, place covers and then raise the lids and grates and restore the boxes to match finished grade following final paving operations.

During initial lowering of utility frame and cover and prior to paving, Contractor shall compact the materials, including cutback if used, within the utility frame.

Contractor shall immediately repair any areas where temporary paving over structures has become loose or uneven.

3.05 CLEANING

All covers shall be completely cleaned of all asphaltic material.

3.06 CORRECTIVE WORK

Any frames, grates, or covers damaged by the Contractor while paving shall be replaced at his expense. Broken boxes shall be replaced by the Contractor and no additional compensation will be allowed.

PART 4 – MEASUREMENT AND PAYMENT

Included in Section 100 of these Technical Specifications.

END OF SECTION 112

THIS PAGE INTENTIONALLY LEFT BLANK

END OF TECHNICAL SPECIFICATIONS