SPECIAL PROVISIONS – TECHNICAL

Bridgeway Safety Improvement Project – Napa St to Johnson Street Project

(herein referred to as “the Project”)

City of Sausalito

The Technical Specifications contained herein have been prepared by or under the direction of the following Registered Person:

CIVIL

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Registration 93910 Exp. 09/30/2026

Parametrix

Technical Provisions for this contract shall be in conformance with the State of California Department of Transportation (Caltrans) 2024 Edition Standard Specifications (herein referred to as the Standard Specifications), City of Sausalito (herein referred to as Owner), Standard Drawings, these Special Provisions, and the Bridgeway Boulevard Improvements Plan (herein referred to as the Plans), and as amended and or superseded by the following:

Bidder shall note that the amendment and the following provisions are not all shown in the order or numbering system as shown in the Standard Specifications.

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SPECIAL PROVISIONS - TECHNICAL PROVISIONS

SECTION NO. 1 – GENERAL

The Contractor shall note the following are required to complete the scope of these improvements.

DIR REGISTRATION.

City will not accept a Bid Proposal from or enter into the Contract with a bidder, without proof that the bidder and its Subcontractors are registered with the California Department of Industrial Relations ("DIR") to perform public work under Labor Code Section 1725.5, subject to limited legal exceptions.

These prevailing rates are available online at http://www.dir.ca.gov/DLSR. Each Contractor and Subcontractor must pay no less than the specified rates to all workers employed to work on the Project. The schedule of per diem wages is based upon a working day of eight hours. The rate for holiday and overtime work must be at least time and one-half.

Subcontractor List. Each bidder must submit the name, location of the place of business, California contractor license number and DIR registration number for each Subcontractor who will perform work or service or fabricate or install work for the prime contractor in excess of one-half of 1% of the bid price, using the Subcontractor List form included with the Contract Documents.

Please note: If City is unable to confirm that the bidder's DIR registration is current, City must disqualify the bidder and return its bid unopened. (Labor Code section 1725.5.)

JOB SITE REVIEW

See Sections 2-1.30 "Job Site and Document Examination" and 2-1.06B "Supplemental Project Information" of the Standard Specifications.

The bidder shall carefully examine the work site(s), the plans, specifications, and the proposal contract forms. Prior to bidding, the prospective contractors shall thoroughly investigate the conditions which will be encountered in the project.

PEDESTRIAN AND BICYCLE ACCESS

The Contractor shall provide a safe continuous path of travel for pedestrian and bicycle traffic during all phases of construction and at all project sites. If pedestrians are directed away from the existing pedestrian travel way due to construction, a suitable alternate path shall be provided. A suitable alternate path may include, but is not limited to, temporary ADA compliant ramps, traffic control, and physical fully ADA accessible barriers to separate pedestrians from traffic and signage. It is clearly understood that it is the Contractor's responsibility to provide a safe path of travel at all times. The Contractor shall submit a pedestrian traffic control plan for engineer's approval prior to commencing work.

CONTRACTOR CONTACTS

In addition to the contract requirements of Section 5-1.16 "Representative" of the Standard Specifications, the Contractor shall also provide to the City Representative, the names, address and telephone numbers of at least two additional emergency contacts for the duration of this contract.

QUARRY ACCESS

Any vehicles used in the transport of materials to and from the San Rafael Rock Quarry (SRRQ) for the performance of work on this contract shall be tarped. This shall include the tarping of *empty* vehicles on the way to pick up materials from SRRQ, as well as, the tarping of *loaded* vehicles delivering materials from SRRQ to the area of work. Tarps shall be held in place securely so as to minimize "flapping".

HAUL ROUTES

Prior to the pre-construction conference, the Contractor shall submit for approval the proposed route(s) for all construction traffic on the project. This shall include any designated routes, if any, shown on the Contract Drawings. Upon approval, the Contractor shall strictly adhere to that route(s) only, unless written permission is obtained to change the route(s).

Designated Truck Routes - The courses or routes along which the Contractor's vehicles and equipment may travel, are as follows:

Any highway which is a part of or is within the State Highway System.

a. Commencing at the easterly limits of the City of Sausalito where the same is intersected by….

The Contractor shall not use the following streets for construction access, loading or unloading of equipment, parking, storage or staging at any time:

a. xxxxxx

A penalty of $500 per day per vehicle will be charged for non-compliance with this section. All penalties will be deducted from payments due the Contractor.

ALLOWABLE WORK HOURS

The Contractor's work hours shall be limited based on whether or not school is in session as follows:

1. School out of session (Summer Hours):
2. School in session: All other times.

Street	Work	Allowable Closure Hours of Work (Summer Hours)	Allowable Closure Hours of Work (All Other Times)
All	All	8 AM to 5 PM	With prior approval of City Engineer

Work activities not requiring lane closures shall be limited to the hours of 7:30 AM to 5:00 PM.

The City Representative will make no exception to this requirement.

COORDINATION WITH OTHER CITY WORK

The Contractor shall coordinate their activities with contractors constructing other improvements in the City as directed by the City Representative to avoid unnecessary disruption to the Mill Valley community.

END OF SECTION

SECTION NO. 2 – ORDER OF WORK AND PROGRESS SCHEDULE

2.01 GENERAL

The City anticipates issuing the Notice to Proceed shortly after the contract is fully executed. This will provide the Contractor with ample time to prepare and submit Submittals. Within two (2) days of the City Representative issuing the Notice to Proceed, the Contractor shall submit a construction schedule detailing all elements of work in accordance with Section 8-1.02 "Schedule" of the Standard Specifications and identifying a commencement date of site work no later October 1st to be approved by city representative. The working days specified in the contract will begin on agreed upon commencement date.

No work may begin under the contract until the City Representative approves the progress schedule and traffic control plans. Time required for review and approval of these items shall not constitute a basis for time extension.

2.02 MATERIALS

NOT APPLICABLE

2.03 EXECUTION

NOT APPLICABLE

2.04 MEASUREMENT AND PAYMENT

Full compensation for complying with the Order of Work and Progress Schedule, and supplying the schedule, including all required updates to the schedule, and coordination shall be considered as included in the contract price for the various bid items, and no separate payment will be made.

SECTION NO. 3 – SUBMITTALS

3.01 GENERAL

The Contractor shall provide submittals of product data, shop drawings, and all others as required by these Special Provision. The Contractor shall provide an electronic version of all submittals in Adobe Acrobat format for review by the City Representative. The Contractor shall not acquire materials until he or she receives a satisfactory approval of the submittal. The Contractor shall submit the following items:

a. Construction Schedule

b. Traffic Control Plans

c. Concrete Mix Design

d. HMA JMF

e. Striping materials

f. Signs

g. Other materials and equipment incorporated into the work

h. Warranty Data

i. Others as Specified in these Special Provisions

Where the Contractor is required by these Special Provisions to submit a physical sample of products, the Contractor shall provide at least one example to be retained by the City Representative. The Contractor shall deliver all samples to the City offices.

3.02 MATERIALS

NOT APPLICABLE

3.03 EXECUTION

NOT APPLICABLE

3.04 MEASUREMENT AND PAYMENT

Compensation for the provisions in this section shall be considered as included in the contract prices paid for the various bid items and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 4 – PUBLIC NOTIFICATION

4.01 GENERAL

The Contractor shall provide public notification as follows:

Prior to Start of Construction - All residents and schools within 300 feet radius or otherwise affected by the start of the work shall be notified, in writing in the form of door hangers, ten calendar days in advance and then again five calendar days in advance of the work by the Contractor. Written notice to residents shall inform them of the specific work of each affected street section, day(s), date(s) and time of work. Written notice shall be reviewed and approved by the City and Engineer prior to being sent to the residents.

4.02 MATERIALS

NOT APPLICABLE

4.03 EXECUTION

NOT APPLICABLE

4.04 MEASUREMENT AND PAYMENT

Full compensation for conforming to the provisions in this section, not otherwise provided for, shall be considered as included in prices paid for the various contract items of work involved and no additional compensation will be allowed therefor.

END OF SECTION

SECTION NO. 5 – MOBILIZATION AND DEMOBILIZATION

5.01 GENERAL

Mobilization shall conform to the provisions in Section 9-1.16(D), “Mobilization,” of the Standard Specifications, and shall consists of preparatory work and operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies incidental to the project site, for the establishment of all staging areas and other facilities necessary for work on the project and for all other work and operations which must be performed or for project costs incurred prior to beginning work on the various Contract items. Mobilization shall include obtaining insurance and bonds, obtaining, and paying for all permits by other agencies if applicable, furnishing temporary construction utilities, installing construction and other construction facilities all as required for the proper performance and completion of the work.

Mobilization shall also include project management as specified elsewhere in these specifications which includes the management of the project as required by the City including all submittals, correspondence, meetings, and coordination with the Contractor’s sub-consultants.

The work of this bid item includes demobilization. Demobilization shall include final cleaning and restoration of the job site, removal of all temporary facilities and equipment from the work area, disconnection of the temporary construction utilities and turnover of project to the City.

Demobilization shall include final cleaning and restoration of the job site, removal of all temporary facilities and equipment from the work area, disconnection of the temporary construction utilities and turnover of project to the City.

5.02 MATERIALS

NOT APPLICABLE

5.03 EXECUTION

NOT APPLICABLE

5.04 MEASUREMENT AND PAYMENT

Full compensation for completing the requirements of this section shall be considered as included in the lump sum price paid for **Bid Item 1 "Mobilization and Demobilization"**.

Partial payments for Mobilization shall not exceed the following:

(1) When 5 percent of the original contract amount is earned, 50 percent of the amount bid for Mobilization, or 5 percent of the original contract amount, whichever is lesser, may be paid.

(2) When 10 percent of the original contract amount is earned, 75 percent of the amount bid for Mobilization or 7.5 percent of the original contract amount, whichever is lesser, may be paid.

(3) When 20 percent of the original contract amount is earned, 95 percent of the amount bid for Mobilization, or 9.5 percent of the original contract amount, whichever is lesser, may be paid.

(4) When 50 percent of the original contract amount is earned, 100 percent of the amount bid for mobilization, or 10 percent of the original contract amount, whichever is lesser, may be paid.

(5) Upon completion of all work on the project, (including: punch list items, cleaning up and removal of all temporary facilities and equipment from the project site) payment of any amount bid for Mobilization in excess of 10 percent of the original contract amount will be paid.

END OF SECTION

SECTION NO. 6 – SURVEY MONUMENT PRESERVATION

6.01 GENERAL

The Contractor shall ensure that existing survey monuments are preserved in full compliance with California Business and Professions Code, Chapter 15, §8771. Survey monuments are not shown in the bidding documents .

Enforcement and Penalty for Non-Compliance

For each existing Survey Monument which was destroyed by the Contractor without benefit of a properly referenced and Pre-Construction Corner Record filed, a fee of $5,000 will be imposed, this being the cost for the County Surveyor to resurvey and reliably reestablish the monument's former location.

6.02 MATERIALS

NOT APPLICABLE

6.03 EXECUTION

NOT APPLICABLE

6.04 MEASUREMENT AND PAYMENT

Full compensation for complying with the above provisions shall be considered as included in various bid items and no separate payment will be made therefor.

END OF SECTION

SECTION NO. 7 – LAYDOWN AREA

7.01 GENERAL

The Contractor shall maintain staging, equipment parking, or materials reasonably close to the City limits or may request use of the City Corporation yard for such use. If the Contractor obtains a site or part of a site for use as a Construction Staging Area or for equipment storage area, the Contractor shall provide a copy such written permission from the lessor or landowner. If the Contractor wishes to use the City Corporation yard, such request has to be in writing and be given a minimum of 10 working days prior to notice to proceed, however is not guaranteed to be available. This laydown area or areas should be of sufficient size to store the contractor's equipment, materials and other items necessary for completing the project. The City's only provision for a Construction Staging Area is the corporation yard. After the project is completed, the contractor shall clean up the yard and remove all excess material and equipment and restore the area to the same conditions prior to construction.

7.02 MATERIALS

NOT APPLICABLE

7.03 EXECUTION

NOT APPLICABLE

7.04 MEASUREMENT AND PAYMENT

Compensation for the provisions in this section shall be considered as included in the contract prices paid for the various bid items and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 8 – EXISTING FACILITIES/COOPERATION

8.01 GENERAL

See Section 5-1.36 "Property and Facility Preservation" of the Standard Specifications and the following Special Provisions.

It is not the intent of the project documents to show the exact location of existing or relocated utilities, and the City Representative assumes no responsibility. Whenever any such utilities are in conflict with project equipment, or operations, the Contractor shall be responsible for verifying their actual location of the conflict in the field and shall notify Underground Service Alert at 811 or (800) 642-2444 prior to construction work.

8.02 MATERIALS

NOT APPLICABLE

8.03 EXECUTION

NOT APPLICABLE

8.04 MEASUREMENT AND PAYMENT

Where excavations are performed in the vicinity of underground utility mains and/or services the Contractor shall, as necessary, perform initial exploratory excavations to determine their exact depth and location of the conflict. Payment for exploratory excavation shall be included in the various items of work needed to complete the excavation work. Extreme care shall be exercised to avoid damage to any existing utilities and existing facilities, and it shall be the Contractor's responsibility to have repairs made to existing facilities at his/her expense in the event of damage by his equipment.

The Contractor's attention is directed to the existence of certain overhead facilities that may require special precautions to protect the health, safety and welfare of the workmen and of the public. These facilities include but are not limited to: overhead PG&E lines, parking light electric supply system conductors or conduits, telephone cables and other overhead cable / internet service lines, or electrical distribution systems.

The Contractor shall not be entitled to any delays associated with the relocation or repair of these utilities and other facilities and shall cooperate fully with the owners of these utilities and other facilities for their relocation and repair work.

All existing utilities in conflict with the proposed improvements shall be temporarily relocated by the contractor.

Existing traffic stripes, pavement markings and pavement markers that are outside the limits of work that are to remain in place shall be protected from wheel marks and other damage by the Contractor. Existing traffic stripes, pavement markings and pavement markers that have been damaged or tracked with bituminous materials shall be cleaned or replaced as approved by the City Representative. The restoration of such objects will be at the Contractor's expense and in conformance with these Special Provisions.

Compensation for the provisions in this section shall be considered as included in the contract prices paid for the various bid items and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 9 – DISPOSAL OF MATERIALS

9.01 GENERAL

The City has not made arrangements for disposal of material, which may include but is not limited to soil, concrete, asphalt, pipe, rock, and vegetation. All excess and unsuitable material shall be disposed of by the Contractor in a legal manner.

It shall be the responsibility of the Contractor to conduct tests to determine the level of contaminants present in the soil to be exported. Soil samples should be collected by a

reputable testing firm and submitted to a state certified laboratory and analyzed for total petroleum hydrocarbons in the diesel (TPHd) and motor oil (TPHmo) ranges (EPA Test Method 8015), 17 California Assessment Manual (CAM) metals (EPA Test Method 6000/7000), organochlorine pesticides (EPA Test Method 8081), and polychlorinated biphenyls (PCBs) (EPA Test Method 8082), polynuclear aromatic hydrocarbons (PAHs) (EPA Test Method 8270SIM), and any other tests required by the receiver of the soil.

If soil is not tested, the Contractor shall assume that all soil has levels of contamination that exceeds environmental screening levels listed by the California Regional Water Quality Control Board for residential land use or commercial/industrial land use, but is non-regulated and non-hazardous. The material shall be stockpiled at the City Corporation yard or other preapproved area until soil can be tested. If soil tests find the soil is contaminated, all contaminated material shall be disposed of in a Class II landfill with all-weather access. All clean soil shall be disposed of at the local landfill.

Disposal of contaminated soil or contaminated groundwater which is encountered in the Work that has levels of contaminants sufficient to be considered a regulated hazardous waste will be as defined in Section 14-11 “Hazardous Waste and Contamination” of the State Standard Specifications and Paragraph U of the Standard Provisions.

The Contractor shall schedule the disposal of materials such that the stockpiled material does not impair access to the Corporation yard or the local disposal facility.

9.02 MATERIALS

NOT APPLICABLE

9.03 EXECUTION

NOT APPLICABLE

9.04 MEASUREMENT AND PAYMENT

Compensation for the provisions in this section shall be considered as included in the contract prices paid for the various bid items and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 10 – UTILITY INSPECTIONS AND EXPLORATORY EXCAVATION

10.01 GENERAL

The Contractor shall perform a utility inspection of the existing utilities located on the existing streets to be paved, looking for conflicts with utilities with his or her paving equipment in performing the demolition of this project. If conflicts are found, exploratory excavations or overhead surveys may be required by the City Representative to determine the exact location of the height or depth of existing utility lines to support the installation of paving operation, and all other tasks required for the successful completion of this project. If required, this exploratory excavation will be required and shall be preapproved by the City Representative in advance. All exploratory excavation shall conform to Section 7-1.11, “Preservation of Property” and Section 8-1.10, “Utility and Non-highway Facilities” of the Standard Specifications.

10.02 MATERIALS

NOT APPLICABLE

10.03 EXECUTION

The Contractor shall contact Underground Service Alert and DC Electric (707) 992-0141 to determine the exact location of the utility in conflict and assist the City Representative in determining the extent of potholing required. If required, exploratory excavation (potholing) and locating the utility shall be at the Contractor's expense.

The Contractor shall cut neatly the asphalt or concrete and use a vacuum type excavation device to remove asphalt or soil to the depth of the utility. The Contractor shall coordinate with the City and outside utility agencies prior to performing any exploratory excavation.

The Contractor shall provide adequate backfill and surface restoration to compliance with City standards. Backfill shall be a controlled low strength material as defined in Section 19-3.02F of the 2024 Standard Specifications. The Contractor shall replace pavement or surfacing material in like kind material and to existing pavement section thickness so that there is no discontinuity between the new and existing surface results. The minimum thickness of asphalt shall be one inch. The Contractor shall coordinate the thickness of the asphalt with the final finished elevation of the roadway's surface to ensure the minimum asphalt thickness is achieved.

The Contractor shall provide the City Representative a description (material, diameter, etc.) of existing utility exposed by the exploratory excavation prior to commencing construction. The exploratory excavation log shall be a neatly redlined plan that shows the horizontal and vertical location (the depth) of each exploratory excavation. The Contractor shall immediately notify the City Representative of any conflicts that prevent the satisfactory completion of the work.

After approval, The Contractor shall take care not to damage any existing facilities during exploratory excavation. Existing facilities damaged by the Contractor's operations, as determined by the City Representative, shall be repaired or replaced to the satisfaction of the City Representative and the owner of the utility if the owner is different from the City, all at the Contractor's expense.

10.04 MEASUREMENT AND PAYMENT

Compensation for the provisions in this section shall be considered as included in the contract prices paid for the various bid items and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 11 – TRAFFIC CONTROL AND CONSTRUCTION AREA SIGNS

11.01 GENERAL

The work shall consist of maintaining and controlling all vehicular traffic through the construction zone and/or detour routes and shall conform to the most current edition of the "California Manual of Uniform Traffic Control Devices (MUTCD) Part 6, "Temporary Traffic Control" published by the U.S. Department of Transportation as amended for use in California.

The work, including flagging, shall comply with section 12, “Temporary Traffic Control,” of the Standard Specifications, in addition to these specifications.

Temporary traffic control shall consist of maintaining and controlling all vehicular traffic through the construction zone and/or detour routes. Traffic control shall include the installation, maintenance, and removal of all necessary traffic control equipment. Damaged or missing equipment shall be replaced immediately. Equipment left in place over weekends or during other periods of non-work shall be checked and maintained on a daily basis until the work is complete and all traffic control devices are removed from the project.

The Contractor shall have a copy of the manual at the work site and shall comply with its provisions.

The Contractor shall maintain accessible paths of travel for all pedestrian and bicyclist traffic through and around work areas.

11.02 SUBMITTALS

The Contractor shall submit a Traffic Control Plan for the project to the City a minimum of five (5) working days prior to commencing any work. No work shall proceed until the City has notified the Contractor in writing of full acceptance of the Traffic Control Plans.

11.03 MATERIAL AND EQUIPMENT

All traffic control supplies and materials including signs, posts, temporary mounting stands, cones, delineators, and barricades shall comply with NCHRP No. 350. Each traffic control plan shall include a compliance letter indicating each type of material or equipment to be used on the project, date of purchase, manufacturer contact information, and a compliance letter or reference.

11.04 EXECUTION

Traffic control shall include the installation, maintenance, and removal of all necessary traffic control equipment. Damaged or missing equipment shall be replaced upon discovery. Equipment left in place over weekends or during other periods of non-work shall be checked and maintained on a daily basis until the work is complete and all traffic control devices are removed from the project.

1. Construction Signing

Construction signing shall be included in traffic control and shall consist of furnishing, installing, maintaining, and removing construction signs, cones, delineators, and barricades.

2. Flaggers

If required in the traffic control plan, and always during one-way traffic control, flaggers will be required to direct traffic during construction. The number and location of flaggers shall be sufficient to allow safe control and passage of traffic through the work zone. During the paving of intersections, two flaggers shall be posted at each intersection for the entire time between tack coat and finish rolling.

During placement of chip seals, and at other times if necessary for public or worker safety, pilot cars shall be required to control traffic speed to a maximum speed of twenty miles-per-hour to

ensure traffic safety. Pilot cars shall be maintained on the chip sealed streets at least until after the primary sweeping, or longer if necessary for safety.

3. Portable Delineators

Portable delineators shall be either cones or tubular markers. Delineators to be used at night or in low light conditions shall be reflectorized. The minimum height of either style of delineator shall be thirty-seven (37) inches above the road surface.

All portable delineators shall comply with the current version of the California MUTCD. The portable delineators shall be spaced as necessary for proper traffic control. However, in no case shall the spacing between the portable delineators exceed fifty feet on tangents or twenty-five feet on curves.

4. Traffic Maintenance

The Contractor shall submit a Traffic Control Plan for each street segment of the project to the City a minimum of five (5) working days prior to commencing any work. No work shall proceed until the City has notified the Contractor in writing of full acceptance of the Traffic Control Plans.

The Contractor shall notify the Engineer of their intention to begin work at least five (5) working days before starting any work at each street location. The Contractor shall cooperate with the Engineer relative to handling all traffic (including pedestrian, bicycling, and equestrian) through the areas and shall make their own arrangements relative to keeping the working area clear of parked vehicles and to clear access to driveways.

If a cross street needs to be temporarily closed when work is in progress through the intersection and the anticipated delay is more than five minutes, a detour sign shall be installed on the cross street and shall include the installation of advance signing displaying the anticipated delay time. The signing shall be reviewed by the Engineer.

The Contractor's equipment and personal vehicles of the Contractor's employees shall not be parked on the traveled way or on any street where traffic is restricted at any time.

5. Restrictions on Closure of Traffic Lanes

Careful coordination will be required between the Contractor and the City for traffic control operations in intersections. A 72 hour minimum notification is required prior to any lane closure.

The streets shall be open for use by public traffic on Saturday, Sunday, and any day designated by the City as a legal holiday; before 8 a.m. and after 5 p.m., Monday thru Friday, or any day preceding a designated legal holiday; and when construction operations are not actively in progress on working days. During daily construction operations, there may be certain peak traffic hours that would require the Contractor to alter the construction schedule in order to minimize the impact of the work on the public's convenience. Failure to adhere to the listed starting times shall result in a penalty of $250 for each half-hour or fraction thereof that the Contractor is found on the roadway prior to the posted start time.

For lane closures, the Contractor shall provide the following taper length and evenly spaced cones for each lane:

Posted Speed Limit	**Taper Length (feet)**	**No. Of Cones**

25 mph	125	7
30 mph	180	10
35mph	245	13
40 mph	320	17
45 mph	540	18

11.05 MEASUREMENT AND PAYMENT

The contract lump sum price paid for **Bid Item 2 "Traffic Control and Construction Area Signs"** shall include full compensation for furnishing all labor, material, equipment, tools, and incidentals necessary to perform the full scope of work as described above, as shown on the plans, as specified in Technical Specifications, and as directed by the Engineer, including traffic control plan submittals, implementation and maintenance of the approved traffic control plans for all work in construction zones throughout the duration of the project. This item shall include any arrow boards that the contractor utilizes under the traffic control plan.

Flagging is paid for under traffic control.

Payments for the lump sum item for Traffic Control shall be determined based on the percentage of the bid item work completed as determined by the Engineer at the time the progress payment is prepared.

END OF SECTION

SECTION NO. 12 – CONSTRUCTION STAKING

12.01 GENERAL

This section specifies the work for construction staking which consists of providing all labor, tools, equipment, materials and incidentals necessary to locate by staking all improvements, to the line and grade shown on the plans.

12.02 MATERIALS

NOT APPLICABLE

12.03 EXECUTION

The Contractor shall be responsible for providing such stakes and marks a reasonable length of time in advance of starting operations that require such stakes and marks to set the curb and gutter, curb ramps and any other roadway modification work. Stakes and marks set by the Contractor's Surveyor or Engineer shall be carefully preserved by the Contractor. In case such stakes and marks are destroyed or damaged, they will be replaced as soon as possible by the Surveyor. The Contractor will be responsible for the cost to replace and restore the stakes and marks.

Survey stakes and marks will be set by a California Licensed Surveyor or a California Registered Civil Engineer to establish the lines and grades required for the completion of the work specified in these specifications and on the Plans.

The Contractor shall be fully responsible for the accuracy of the construction staking. The construction stakes and marks shall be furnished and set with accuracy to assure that the completed work conforms to the lines, grades, and section shown on the Plans. All computations necessary to establish the exact position of the work from control points shall be performed by the Contractor. All computation, survey notes, and other records necessary to accomplish the work shall be neat, legible and accurate. Such computations, notes and other records shall be made available to the Engineer upon request and shall become the property of City

and delivered to the Engineer before acceptance of the project. Construction stakes shall be removed from the site of the work when no longer needed.

Contractor shall provide cut sheets for construction staking to the engineer a minimum of 5 working days before demolition begins.

It shall be the Contractor's responsibility to notify the Engineer of any discrepancies found between the field conditions and grades and notes shown on the Plans. The Contractor shall provide the stationing and the elevations to utility companies to allow the utilities to set their facilities to match the final pavement elevation.

12.04 MEASUREMENT AND PAYMENT

The contract lump sum price paid for **Bid Item 3 "Construction Staking"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved as specified in these Specifications and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 13 – WATER POLLUTION CONTROL

13.01 GENERAL

The goal of these requirements is to prevent the pollution of storm water run-off on construction projects by keeping pollution out of storm drains, reducing the exposure and discharge of materials and wastes to storm water and by reducing erosion and sedimentation. Storm drains discharge run-off directly to creeks and the bay without treatment.

The Contractor shall comply with all Federal, State, and local provisions of any permits applicable to the proposed work and with any requirements of the Engineer due to observed field conditions at the time the work takes place.

The Contractor shall submit a Storm Water Pollution Prevention Plan (SWPPP) to the Engineer for approval at least 48 hours prior to start of construction.

13.02 SUBMITTAL

The Contractor shall submit a **Storm Water Pollution Prevention Plan** (SWPPP) to address the storm drain and various improvements to the City Engineer for approval. SWPPP shall conform to the Marin County Stormwater Pollution Prevention Program Best Management Practices (BMPs) and the requirements of the City of Sausalito and these Specifications.

13.03 EXECUTION

Non-hazardous Material/Waste Management

A. Designated Area

The Contractor shall propose designated areas of the project site for approval by the Engineer, suitable for material delivery, storage and waste collection to the maximum practicable extent, are near construction entrances and away from catch basins, gutters, drainage courses and creeks.

B. Granular Material

The Contractor shall store granular material at least 10 feet away from catch basins and curb returns.

The Contractor shall not allow granular material to enter the storm drains or creeks.

When rain is forecast within 24 hours or during wet weather, the Contractor is required to cover granular material with a tarpaulin and to surround the material with sand bags.

C. Dust Control

Dust control shall be in accordance to Section 10-5, “Dust Control” of the Standard Specifications.

D. Street Sweeping

At the end of each working day or as directed by the Engineer, the Contractor shall clean and sweep roadways and on site paved areas of materials attributed to or involved in the work. The Contractor shall not use water to flush down streets in place of street sweeping.

E. Recycling

The Contractor shall recycle aggregate material, asphalt concrete and Portland Cement Concrete at an approved recycling site.

F. Disposal

At the end of each working day, the Contractor shall collect all scrap, debris and waste materials and dispose of such materials properly.

The Contractor shall inspect dumpsters for leaks and contact trash hauling contractors to replace or repair dumpsters that leak.

The Contractor shall arrange for arrange for regular waste collection before dumpsters overflow.

Hazardous Material/Waste Management

A. Storage

The Contractor shall label and store in a locked enclosure all hazardous materials, such as pesticides, paints, thinners, solvents and fuels and all hazardous wastes, such as waste oil and anti-freeze.

The Contractor shall store all hazardous materials and all hazardous waste according to the County of Marin regulations.

The Contractor shall keep an accurate up-to-date inventory of hazardous material and hazardous wastes stored or used on site to assist emergency response personnel if there is a hazardous material incident.

B. Usage

When rain is forecast within 24 hours or during wet weather, the Contractor shall not apply chemicals in outside areas.

The Contractor shall not over apply pesticides or fertilizers and shall follow material manufacturer's instructions regarding uses, protective equipment, ventilation, flammability and mixing of chemicals.

C. Disposal

The Contractor shall arrange for regular hazardous waste collection to comply with time limits on storage of hazardous waste.

The Contractor shall dispose the hazardous waste only at authorized and permitted Treatment, Storage and Disposal Facilities and use only licensed hazardous waste haulers to remove the waste off-site, unless quantities to be transported are below applicable threshold limits for transportation specified in State and Federal Regulations.

Spill Prevention and Control

The Contractor shall keep a stockpile of spill clean up materials, such as rags or absorbents, readily accessible on site.

The Contractor shall immediately contain and prevent leaks and spills from entering storm drains and properly clean up and dispose of the waste and clean up materials.

The Contractor shall not wash any spilled material into streets, gutters, storm drains, or creeks and shall not bury spilled hazardous materials.

The Contractor shall report any hazardous materials spill to the City.

Vehicle/Equipment Cleaning

The Contractor shall not perform vehicle or equipment cleaning on site or in the street using soaps, solvents, degreasers, steam cleaning equipment or equivalent methods.

The Contractor shall perform vehicle or equipment cleaning, with water only, in a designated, bermed area that will not allow rinse water to run off-site or into streets, gutters, storm drains or creeks.

Vehicle/Equipment Maintenance and Fueling

The Contractor shall perform maintenance and fueling of vehicles or equipment in a designated, bermed area or over a drip plan that will not allow run-off of spills into the storm water system.

Use secondary containment, such as a drip pan to catch leaks or spills any time that vehicle or equipment fluids are dispensed, changed or poured.

Keep a stockpile of spill clean up materials, such as rags or absorbents, readily accessible on site.

Clean up leaks and spills of vehicles or equipment fluids immediately and dispose of the waste and clean up materials as hazardous waste.

Do not wash any spilled material into streets, gutters from drains, or creeks and shall not bury spilled hazardous.

Report any hazardous materials spill to the City.

Inspect vehicles and equipment arriving on site for leaking fluids and shall promptly repair leaking vehicles and equipment. Drip plans shall be used to catch leaks until repairs are made.

Recycle waste oil and anti-freeze to the maximum practical extent.

Comply with Federal, State and City requirements or aboveground storage tanks.

Contractor Training and Awareness

The Contractor shall train all employees/subcontractors on the storm water pollution prevention requirements contained in these Specifications.

Inform subcontractors of the storm water pollution prevention contract requirements and include appropriate subcontract provisions to ensure that these requirements are met.

Post warning signs in areas treated with chemicals.

Paint new catch basins, constructed as part of the project, with “No Dumping" or as directed by the Engineer.

Activity Specific Requirements

The following requirements shall be met on all projects with the City which include the listed activities.

1. Dewatering Operation

A. Sediment Control

The Contractor shall route water through a control measure, such as a sediment trap, sediment basin trap, sediment basin to remove settleable solids before discharge to the storm drain system.

Approval of the control measures shall be obtained in advance from the Engineer.

Filtration of the water following the control measures may be required on a case-by-case basis.

If the Engineer determines that the dewatering operation would not generate an appreciable amount of settleable solids, the control measures requirement in (1) above may be waived.

The Contractor shall reuse water for other needs, such as dust control or irrigation to the maximum practicable extent.

B. Contaminated Groundwater

If the project is within an area of known groundwater contamination, then water from dewatering operations shall be tested before discharge. If the water quality meets Regional Water Control Board (RWQCB) standards, then it may be discharged to the storm drain.

Otherwise, the water shall be treated or hauled off-site for proper disposal.

2. Paving Operations

A. Project Site Management

When rain is forecast 24 hours or during wet weather, the Engineer may prevent the Contractor from paving.

The Engineer 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 and filter sediment.

The Contractor shall place drip pans or absorbent material under paving equipment when not in use.

The Contractor shall cover catch basins and maintenance holes when paving or applying a seal coat or tack coat.

B. Paving Waste Management

The Contractor shall not sweep or wash down excess sand or screenings (placed as part of a sand seal, chip seal or to absorb excess oil) into gutters, storm drains or creeks. Instead, the Contractor shall either collect the sand and screenings and return it to the stockpile or dispose of it in a trash container. The Contractor shall not use water to wash down fresh asphalt concrete pavement.

3. Saw Cutting

A. During saw cutting, the Contractor shall cover or barricade catch basins using control measures, such as filter fabric, straw bales, sand bags and fine gravel dam to keep slurry out of the storm drain system. When protecting a catch basin, the Contractor shall ensure that the entire opening is covered.

B. The Contractor shall shovel, absorb or vacuum saw cut slurry, and pick up waste before moving to the next location or at the end of each working day, whichever is sooner.

C. If saw cut slurry enters catch basins, the Contractor shall remove the slurry from the storm drain system immediately.

4. Contaminated Soil Management

A. On all projects involving grading or excavation, the Contractor shall look for contaminated soil as evidence by site history, discoloration, odor, differences in soil properties, abandoned underground tanks or pipes or buried debris. If the project is not within an area of known soil contamination and no evidence of soil contamination is found, then testing of the soil shall only be required if directed by the Engineer. The Contractor shall follow Section 113-2,B.4.b below if contamination is found.

B. If the project is within an area of known soil contamination or evidence of soil contamination is found, then soil from grading or excavation operations shall be tested. The soil shall be managed as required by the Engineer.

5. Concrete, Grout and Mortar Waste Management

A. Material Management

The Contractor shall store concrete, grout and mortar away from drainage areas and ensure that these materials do not enter the storm drain system.

B. Concrete Truck/Equipment Wash Out

The Contractor shall not wash out concrete trucks or equipment into streets, gutters, storm drains or creeks.

The Contractor shall perform wash out of concrete trucks or equipment off-site or in a designated area on site where water will flow onto dirt or into a temporary pit in a dirt area. The Contractor shall let the water percolate into the soil and dispose of the hardened concrete in a trash container. If a suitable dirt area is not available, then the Contractor shall collect the wash water and remove it offsite.

C. Exposed Aggregate Concrete Wash Water

The Contractor shall avoid creating run-off by draining water from washing of exposed aggregate concrete to a dirt area. If a suitable dirt area is not available, then the Contractor shall filter the wash water through straw bales or equivalent material before discharging to the storm drain.

The Contractor shall collect and return sweepings from exposed aggregate concrete to a stockpile or dispose of the waste in a trash container.

6. Painting

A. Painting Clean Up/Designated Area

The Contractor shall conduct cleaning of painting equipment and tools in a designated area that will not allow run-on of storm water or run-off of spills.

The Contractor shall not allow wash water from cleaning of painting equipment and tools into streets, gutters, storm drain or creeks.

B. Water-Based Paint

The Contractor shall remove as much excess paint as possible from brushes, rollers and equipment before starting clean up.

To the maximum practicable extent, the Contractor shall dispose of ash water from aqueous cleaning of equipment and tools to the sanitary sewer. Otherwise, the Contractor shall direct wash water onto dirt area and spade in.

C. Oil-Based Paint

The Contractor shall remove as much excess paint as possible from brushes, rollers and equipment before starting clean up.

To the maximum practicable extent, the Contractor shall filter paint thinner and solvents for re-use.

The Contractor shall dispose of waste thinner and solvent and sludge from cleaning of equipment and tools and hazardous waste, as described in Section 113-2.A.2.c above.

D. Material/Waste Management

The Contractor shall store paint, solvents, chemicals and waste materials in compliance with the Marin County regulations and all applicable State and Federal regulations. The Contractor shall store these materials in a designated area which will not allow run-on of storm water of run-off of spills.

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

The Contractor shall dispose of dry, empty paint cans/buckets, old brushes, rollers, rags and drop cloths in the trash.

7. Earthwork

The Contractor shall maximize the control of erosion and sediment by using the BMP's for erosion and sedimentation in the California Storm Water Best Management Practice Handbook - Construction Activity.

13.04 MEASUREMENT AND PAYMENT

The contract lump sum price paid for **Bid Item 4 "Water Pollution Control"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work in providing, maintaining, removing, and disposal of erosion control measures, maintaining dust control measures, and submitting Water Pollution Control Plan as in these Specifications and no additional compensation will be allowed

END OF SECTION

SECTION NO. 14 – CLEAR AND GRUB

14.01 GENERAL

All clearing and grubbing work shall be done in accordance with Section 17-2, "Clearing and Grubbing", of the State Revised Standard Specifications, these Technical Specifications, and as directed by the Engineer.

14.02 EXECUTION

Clearing and grubbing shall consist of (but not limited to) removing and disposing of vegetative growth and deleterious materials in tree wells, tree roots, grass, shrubs, plants, weeds, rocks, and all other objectionable material as required to construct the improvements, as shown on the plans and as specified in these Specifications. The Contractor shall remove and dispose all trees and plantings not shown on the plans which conflicts with the installation of the proposed improvements.

Contractor shall trim all vegetation which encroaches past the back of sidewalk throughout the project.

The Contractor shall take all reasonable precautions to restrict their operations to the least area of work possible, and shall not disturb public or private property beyond the limits of work. Relevant property boundaries and easement lines are shown on the Plans.

Prior to starting clearing and grubbing operations, the Contractor shall inform the Engineer of the intended limits of his/her clearing and grubbing operations and shall obtain the Engineer's approval on such proposed limits. The Contractor shall not clear and grub any area not essential to their construction obligations and protect from injury or damage resulting from his/her operations all vegetation, facilities, or improvements, which are to remain.

Contractor shall trim all vegetation to a 14-foot height back to the face of curb minimum along all streets to be paved before asphalt grinding and paving begins. Contractor may be required to trim back tree branches and bushes further to complete other work items and no additional compensation shall be provided.

All removed materials, unless otherwise indicated on the Plans or specified herein, shall become the property of the Contractor and they shall make arrangements for disposal outside the road right-of-way at a legal dumpsite.

14.03 MEASUREMENT AND PAYMENT

The contract price paid per square foot identified in the bid schedule **Bid Item 5** "**Clear and Grub"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in clearing and grubbing, including the removal and disposal of the resulting material, as specified in the Revised Standard Specifications and these Specifications, and as directed by the Engineer and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 15 – DISPOSAL OF MATERIALS

15.01 GENERAL

The City has not made arrangements for disposal of material, which may include but is not limited to soil, concrete, asphalt, pipe, rock, and vegetation. All excess and unsuitable material shall be disposed of by the Contractor in a legal manner.

It shall be the responsibility of the Contractor to conduct tests to determine the level of contaminants present in the soil to be exported. Soil samples should be collected by a reputable testing firm and submitted to a state certified laboratory and analyzed for total petroleum hydrocarbons in the diesel (TPHd) and motor oil (TPHmo) ranges (EPA Test Method 8015), 17 California Assessment Manual (CAM) metals (EPA Test Method 6000/7000), organochlorine pesticides (EPA Test Method 8081), and polychlorinated biphenyls (PCBs) (EPA Test Method 8082), polynuclear aromatic hydrocarbons (PAHs) (EPA Test Method 8270SIM), and any other tests required by the receiver of the soil.

If soil is not tested, the Contractor shall assume that all soil has levels of contamination that exceeds environmental screening levels listed by the California Regional Water Quality Control Board for residential land use or commercial/industrial land use, but is non-regulated and non-hazardous. The material shall be stockpiled at the City Corporation yard or other preapproved area until soil can be tested. If soil tests find the soil is contaminated, all contaminated material shall be disposed of in a Class II landfill with all-weather access. All clean soil shall be disposed of at the local landfill.

Disposal of contaminated soil or contaminated groundwater which is encountered in the Work that has levels of contaminants sufficient to be considered a regulated hazardous waste will be as defined in Section 14-11 “Hazardous Waste and Contamination” of the State Standard Specifications and Paragraph U of the Standard Provisions.

The Contractor shall schedule the disposal of materials such that the stockpiled material does not impair access to the Corporation yard or the local disposal facility.

15.02 MATERIALS

NOT APPLICABLE

15.03 EXECUTION

NOT APPLICABLE

15.04 MEASUREMENT AND PAYMENT

Compensation for the provisions in this section shall be considered as included in the contract prices paid for the various bid items and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 16 – REMOVE PAVEMENT DELINEATION AND MARKINGS

16.01 GENERAL

All existing pavement delineation and pavement markings and markers, when no longer required for traffic lane delineation, shall be removed to the limits as shown on the plans or as directed by the Engineer, and properly disposed of. The pavement delineation and markers shall be maintained, as long as practical, until the removal is scheduled. Adequate lane markings and temporary traffic control shall be provided at all times.

Attention is directed to the Section 84-2, "Traffic Stripes and Pavement Markers," of the Standard Specifications and the section titled "Water Pollution Control," of these Special Provisions.

Nothing in these Special Provisions will relieve the Contractor's responsibilities as provided in the section titled, "Public Safety," of these Special Provisions.

16.02 MATERIALS

NOT APPLICABLE

16.03 EXECUTION

Existing thermoplastic traffic stripes, pavement markings and markers, and delineator posts, when no longer required for traffic lane delineation as directed by the Engineer, shall be removed and disposed of outside the right of way in accordance with the provisions in Section 13─4.03E(8) of the 2024 Standard Specifications, by industry standard grinding methods and must not be performed by using flame or heat methods.

Removal and disposal of yellow traffic stripes shall conform with the provisions of Section 14-11.2 of the 2024 Standard Specifications.

REMOVAL OF DEBRIS

All debris generated from this activity shall be hauled off-site at the end of each work day.

LEAD COMPLIANCE PLAN

Yellow thermoplastic and yellow paint traffic stripe exist along the length of the project. Residue produced when yellow thermoplastic and yellow paint are 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. The existing pavement markings must be tested for lead content. If the evaluation indicated elevated levels of lead and chromium, residue from the removed markings must be treated as a hazardous waste, and must be handled and disposed of in accordance with the requirements outlined below.

Prepare and submit a Lead Compliance Plan in accordance with Section 7-1.02K (6) (j) (ii) of the Standard Specifications. Before submission to the Engineer, the Lead Compliance Plan must be approved by an Industrial Hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene. The Plan must be submitted to the Engineer at least 7 days prior to beginning removal of yellow thermoplastic and yellow paint. Perform all removal work according to the Plan.

The removed yellow thermoplastic and yellow paint must be disposed of at a Class 1 disposal facility or a Class 2 disposal facility permitted by the Regional Water Quality Control Board in conformance with the requirements of the disposal facility operator within 5 days after accumulating 220 pounds of residue and dust.

Where grinding or other methods approved by the Engineer are used to remove yellow thermoplastic and yellow painted traffic stripe, the removed residue, including dust, must be contained and collected immediately. Sweeping equipment must not be used. Collection must be by a high efficiency particulate air (HEPA) filter equipped vacuum attachment operated concurrently with the removal operations or other equally effective methods approved by the Engineer.

Where pavement markings have been removed, asphalt tack coat shall be applied over the removal areas.

16.04 MEASUREMENT AND PAYMENT

The contract lump sum price paid for **Bid Item 6 "Remove Pavement Delineation and Markings"** and no separate payment will be made therefor and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 17 – DEMOLISH AND REMOVE FACILITIES

17.01 SCOPE OF WORK

The work shall consist excavation and disposal of removal and disposal of indicated trees; roadway and curbs and gutter within new asphalt roadway, median islands and sidewalk improvements; removal of existing guy wire connections, curb inlets, drop inlets, irrigation valves, removal of sidewalk and as shown on plans; removal of signs and luminaires.

17.02 MATERIALS

NOT APPLICABLE

17.03 EXECUTION

1. Remove Minor Concrete

Concrete sidewalk, roadway, curb and gutter, curb ramp, drainage structures, and hardscape, shall be removed as shown on the plans and in accordance with the provisions in Section 15-3, "Concrete Removal," of the State Standard Specifications and these Special Provisions.

Concrete sidewalk, curb, and gutter shall be removed to the joint lines. Where no joints exist in the curb, gutter, or sidewalk on which concrete is to be removed, a straight, neat cut with a power-driven saw shall be made along said line to a minimum depth of 2-inches before removing concrete. Concrete saw cuts shall be at score marks.

Sidewalk, curb, gutter, hardscape or other miscellaneous concrete not identified on the plans for removal which is damaged as a result of the Contractors operations shall be removed and replaced in kind at the Contractor's expense. Concrete removed shall be disposed of outside the street right of way in accordance with relevant sections of the State Standard Specifications.

Concrete removed shall be disposed of outside the street right of way in accordance with relevant sections of the State Standard Specifications.

2. Asphalt Concrete Pavement

The Contractor shall remove existing asphalt concrete and base material as shown on the plans for the purposes of installing new improvements. On the line at which the asphalt concrete is to be removed, a straight, neat cut, with a power driven saw (or other acceptable means) shall be made to the full depth of the existing asphalt concrete prior to the removal of the asphalt concrete pavement.

Removal operations shall be performed with minimum damage to any portion of the asphalt concrete pavement that is to remain in place. All damage to the existing asphalt concrete to remain in place shall be repaired to a condition equal to that existing prior to the beginning of removal operations at the Contractor's own expense.

Residue from cutting operations shall not be permitted to flow into storm drains or across lanes occupied by traffic and shall be removed from the pavement surface, concurrent with the cutting operation. All excavated material shall be removed and disposed of outside the right of way in accordance with relevant sections of the State Standard Specifications.

Surplus excavated material shall become the property of the Contractor and shall be disposed of outside the project site at the Contractor's own expense. No excavated material will be allowed to be stockpiled overnight in or adjacent to public rights-of-way, unless approved by the Engineer. If stockpile locations are approved, all stockpiles shall be properly covered and barricaded.

Unless otherwise provided for in these Special Provisions, the excavation may not be left without backfill during non-working hours except with prior written approval from the Engineer. Excavations left without backfill shall be barricaded and covered or otherwise protected to ensure public safety.

3. Existing Road Signs

Existing roadside signs shall not be removed until replacement signs have been installed or until the existing signs are no longer required for the direction of public traffic, unless otherwise directed by the Engineer. The signs to be removed shall be salvaged and shall be returned to the City of Sausalito. The existing signs to remain shall be protected during construction.

Existing roadside signs, at locations shown on the plans to be salvaged, shall be removed, salvaged and delivered to City of Sausalito Corporation Yard at **530 Nevada Street Sausalito, CA 94965**.

Existing sign posts to be removed in sidewalk areas shall be removed by cutting and grinding the posts flush with the grade of the sidewalk. Any holes or depressions shall be leveled with grout; vertical ledges or protrusions greater that 1/8" shall not be allowed.

Existing sign posts to be removed in all other areas shall be removed by cutting and grinding the posts down to the foundation. Any holes or depressions shall be leveled with grout; vertical ledges or protrusions greater that 1/8" shall not be allowed.

4. Existing Parking Meters

Contractor shall notify City staff within 14-days calendar days prior to parking meter removal. City staff shall remove the meter only. As indicated in the plans, the Contractor shall remove posts and concrete pad. The Contractor shall sawcut and replace existing concrete pavement section in-kind. The Contractor shall removal all concrete from post and coordinate with the Engineer for salvaging and/or disposal. New concrete pavement section shall be flush to existing grade with no tripping hazard remaining following construction. Any holes or depressions shall be leveled with grout. Vertical ledges or protrusions will not be allowed.

5. Tree Removal

Trees to be removed as indicated in the project plans.

Tree removal work will include grinding stumps and visible roots down to a minimum depth of one (1) foot below existing surface grade. Tree grindings and sawdust shall become property of the contractor and must be properly disposed of the same day as the tree removal.

6. Miscellaneous Removals

All removed material, unless otherwise indicated on the plans specified herein, shall become the property of the Contractor who shall dispose of same outside the right-of-way at a legal dumpsite.

Existing utilities encountered during construction shall be protected at all times. Each respective utility company shall operate solely their own utility.

Contractor shall remove, store, and reset border rocks and brick walls at back of curb as indicated in the plans.

17.04 MEASUREMENT AND PAYMENT

The contract price paid per square foot identified in the bid schedule **Bid Item 7 "Remove Asphalt Concrete – Depth of 4"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing asphalt concrete as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract price paid per square foot identified in the bid schedule **Bid Item 8 "Remove Asphalt Concrete and Base"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing asphalt concrete and base as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract price paid per square foot identified in the bid schedule **Bid Item 9 "Remove Concrete and Base"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing

concrete and base as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract price paid per each identified in the bid schedule **Bid Item 10 "Remove Existing Drainage Inlet – Top 12""** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing drainage inlets as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract price paid per each identified in the bid schedule **Bid Item 11 "Remove Luminaire"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing luminaires as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract price paid per each identified in the bid schedule **Bid Item 12 "Remove Parking Meter"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing parking meters as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract price paid per each identified in the bid schedule **Bid Item 13 "Remove Existing Pedestrian Push Button Post"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing pedestrian push button posts as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract price paid per each identified in the bid schedule **Bid Item 14 "Remove Existing Sign, Post and Foundation"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing sign, post, and foundation as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract price paid per each identified in the bid schedule **Bid Item 15 "Remove Tree"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing trees as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 18 – MICROSURFACE MAINTENANCE TREATMENT

18.01 GENERAL

The Contractor shall perform all work associated with Micro-Surfacing as shown and as specified herein including all labor, materials, equipment supplies, and facilities associated with providing a finished product satisfying all the requirements of the Contract Documents.

See Section 37-3.03: Micro-Surfacings and Section 32 17 23, Pavement Markings in the Standard Specifications.

18.02 MATERIALS

Micro-surfacing emulsion

Micro-Surfacing emulsion shall be in accordance with Section 37-3.03B(2) of the Caltrans Standard Specifications with the exceptions noted in these specifications.

Aggregate

Aggregate shall be in accordance with Section 37-3.03B(3) of the Caltrans Standard Specifications.

Mix design

Mix design shall be in accordance with Section 37-3.03B(5) of the Caltrans Standard Specifications.

18.03 SUBMITTALS

The Contractor shall submit, at least seven (7) working days before microsurfacing placement commences, a laboratory report of test results and proposed mix design covering the specific materials to be used on the project. The percentage of asphaltic emulsion proposed in the mix design shall be within the percentage range specified herein.

18.04 EXECUTION

General requirements

The application of microsurface slurry shall conform to Section 37-3.03 of the Caltrans Standard Specifications with the exceptions noted in these Specifications.

The slurry shall be placed at a rate to produce 10 to 13 pounds of aggregate per square yard for Type II slurry, as required in these Specifications. The complete mixture shall be such that the slurry seal mixture has proper workability and will permit traffic flow within two (2) hours after placement without the occurrence of bleeding, raveling, polishing, separation, or other distress within 30 days after its placement.

Asphaltic emulsion shall be added at a rate of between 5.5 to 1.05 percent by weight of the dry aggregate. The extract rate will be determined by the Engineer. The quantity of asphaltic emulsion to be used in the slurry mixture will be determined by the design asphalt binder content, as approved by the Engineer, and the asphalt solid content of the asphaltic emulsion furnished.

The Contractor shall sweep all micro-surfaced streets seven (7) days after the application of micro-surface slurry with a power sweeper.

Proportional mixing

The proportional mixing of slurry seal shall conform to Section 37-3.03B and 37-3.03C of the Caltrans Standard Specifications.

The mixer shall thoroughly blend all materials to form a homogenous mass before leaving the mixer.

Surface preparation

All existing striping and pavement markers shall also be removed prior to the application of the slurry seal. The slurry shall be applied within 72 hours after the removal of pavement striping marker.

The complete street surface shall be power swept from face of curb to face of curb prior to the application of micro-surface slurry. The Contractor shall provide cleaning method necessary to remove all dirt, vegetation, and loose materials from the pavement.

All material gathered shall be properly disposed of by the Contractor. The Contractor shall remove all plant material growing in the street or on the interface of the asphalt surface with the lip of concrete gutter prior to placing slurry.

Immediately preceding the slurry seal application, the Contractor shall cover all grates, slotted manholes, and other appurtenances on the pavement that would allow the entry of slurry; cover all manhole covers, water and gas valve box covers, monuments boxes, grates and other exposed facilitates with plastic oil resistant construction paper secured by tape or adhesive. The Contractor prior to the final set of the slurry shall uncover all covered manholes, valves, grates and boxes. All uncovered items shall be clean and meet the requirement of the Project Inspector.

All catch basin grates and hoods adjacent to the work or within 50 feet shall be covered to prevent slurry from entering the catch basin.

Spreader box

The slurry mixture shall be spread by means of a controlled spreader box conforming to Section 37-3.03C of the Caltrans Standard Specifications.

The spreader box shall be clean and free of all slurry seal and emulsion at the start of each working shift.

Sand blotter

A sand blotter shall be spread at selected driveways, intersections, and where required by the Engineer to accommodate pedestrian or vehicular traffic until the slurry set.

Application of micro-surface slurry

The surface shall be fogged with water directly preceding the spreader. The slurry mixture shall be of the desired consistency when deposited on the surface. Total time of mixing shall not exceed four (4) minutes. A sufficient amount of slurry shall be carried in all parts of the

spreader at all times so that the complete coverage is obtained. No lumping, balling or unmixed aggregate shall be permitted. No segregation of the emulsion and aggregate fines from the coarse aggregate will be permitted. If coarse aggregate settles to the bottom of the mix, the slurry will be removed from the pavement. No excessive breaking of the emulsion will be allowed in the spread box. No streaks such as those caused by oversize aggregate will be left in the finished pavement.

The entire pavement, including the area around curb return shall be covered from gutter lip to gutter lip. The ends of micro-surfaced streets shall be a clean, straight line created by placing 15 lb felt paper with a 30 in. minimum width to create the line.

Longitudinal joints must correspond with lane lines. You may request other longitudinal joint patterns if they do not adversely affect the slurry seal.

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

Use kraft paper at transverse joints and over previously placed slurry seal to prevent double placement. Remove the paper after use. Use hand tools to remove spillage.

No excessive buildup, or unsightly appearance shall be permitted on longitudinal or transverse joints. Burlap drags shall be used and changed daily.

Approved squeegees shall be used to spread slurry in non-accessible areas to the slurry mixer. Care shall be exercised in leaving no unsightly appearance from handwork.

Slurry application will be stopped to allow sufficient time to allow slurry to cure prior to opening streets to traffic. Protect the slurry seal from damage until it has cured.

All gutter spills must be cleaned immediately.

Weather limitations

Only place micro-surfacing if both the pavement and air temperatures are at least 50 degrees Fahrenheit and rising. The expected high temperature must be at least 65 degrees Fahrenheit within 24 hours after placement.

Do not place micro-surfacing if rain is imminent or the air temperature is expected to be below 36 degrees Fahrenheit within 24 hours after placement.

Slurry repair

In the event that the applied micro-surface slurry surface violates the project requirements or has the following conditions:

1. Tire or wheel marks
2. Longitudinal ridges
3. Picked up or raveled areas
4. Transverse ridges or bumps
5. Washboarding or excessively rough sand blotters

The micro-surface slurry shall be repaired as follows:

1. The micro-surface slurry shall be removed by a "PENHALL PROFILER" or equal and a full lane width pass of slurry applied in full compliance with these specifications.

2.The Engineer may omit removal of the affected slurry if it would not affect the repair.

Striping

Temporary striping and legends shall be placed on the newly micro-surfaced streets prior to the release of streets to traffic. These materials must be submitted to the Engineer for approval prior to installation.

Permanent striping shall be installed after seven (7) days but no later than ten (10) days after the microsurface is complete in accordance with Section 32 17 23, Pavement Markings.

18.05 MEASUREMENT AND PAYMENT

The contract per square yard paid for **Bid Item 16 "AC Microseal"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 19 – HOT MIX ASPHALT

19.01 GENERAL

This work includes producing and placing Hot Mix Asphalt (HMA) base and surface courses using the Standard Process, and producing and placing HMA leveling courses and Minor HMA using the Method Process as indicated herein.

Comply with Section 39, "Hot Mix Asphalt," of the 2022 Standard Specifications except as modified in these special provisions.

19.02 SUBMITTALS

Submit JMF information on Form CEM-3511 and Form CEM-3512. Submit Form CEM-3513 or CEM-3514 for mixes that have been verified within last 12 months. Provide most recent CEM-3513 if mix has not been verified within the last 12 months. For unverified mixes or out of date mix tests, final acceptance will be based on production startup tests and Contractor will be paving at their own risk.

Submit Quality Control Plan that conforms to the current Caltrans Quality Control Plan Review Checklist for Hot Mix Asphalt. Allow 20 calendar days for review.

Material Delivery Tickets shall be submitted daily.

Contractor shall submit all quality control field test results daily and laboratory test results within 5 calendar days of sampling.

19.03 MATERIALS

1. Asphalt Binder

The grade of asphalt binder mixed with aggregate for all HMA Type A shall be PG 64-16.

2. Aggregate

The hot mix asphalt to be used will be as follows unless modified by the plans, these special provisions, or the Engineer:

Leveling Course:	3/8 inch, Type A
Base Course:	1/2 inch, Type A
Surface Course:	1/2 inch, Type A

3. Mix Properties

Mix voids shall be targeted at 3.5%.

The allowable production range for mix voids shall be 2.0% to 5.0%.

The mix shall include 0.5% liquid antistrip. No warm mix additive shall be allowed.

4. Delivery Tickets

Material Delivery Tickets shall be submitted daily. Each delivery ticket shall include information on the material type, binder type, oil content, and the mix design number. Material delivered to the project without such annotations shall be subject to rejection.

19.04 EXECUTION

1. Surface Preparation

The work shall consist of preparing the existing street surfaces prior to the commencement of paving. Such work shall include removing raised pavement markers, removing thermoplastic traffic markings and legends, controlling nuisance water, sweeping, watering, and removing loose and broken pavement and foreign material as specified in the Standard Specifications and these Technical Provisions, and as directed by the Engineer.

All vertical edges to be paved against shall be tack coated. These include, but are not limited to, curb faces, gutter lips, swale edges, cross gutter edges, and pavement edges. **In additional, all horizontal surfaces to be paved on shall be tack coated. These include, but are not limited to, existing and cold planed surfaces, and leveling, base, and intermediate courses.**

Tack coat shall be utilized and shall be either emulsified asphalt Grade RS-1, RS-1h, SS-1, or SS-1h conforming to Section 94, “Asphaltic Emulsions,” or paving grade asphalt conforming to Section 92, “Asphalts Binder.”

The asphalt tack coat shall be placed with a calibrated distributor truck per Subsection 93-1.03C of the Standard Specifications, unless otherwise specified by the Engineer. The application temperature of the asphalt emulsion shall be 300 degrees Fahrenheit minimum and 375 degrees Fahrenheit maximum.

All cold joints, both longitudinal and transverse, shall be heated with a torch immediately prior to paving. Cold joints include previous passes placed more than three hours prior. All cold joints shall be tack coated.

2. Leveling, Transitions, and Hot Mix Asphalt Fills

A leveling course of variable thickness shall be placed and compacted prior to placing the surface course at locations where directed by the Engineer. The leveling course will be used to correct pavement irregularities such as rutting, variable cross slope, or variable longitudinal slope. Where two overlays of different thickness abut at a longitudinal joint, the Contractor shall add to the thinner leveling course section to match the thicker lift and provide a smooth transition and uniform cross-fall. Cold planing ridges or other rises in the pavement surface may be required by the Engineer. The Engineer will determine the exact limits and thickness of the leveling courses, hot mix asphalt fills, and transitions.

The Contractor shall construct temporary pavement transitions at all paving conforms, planned edges, cross gutters, and commercial and residential driveways with drop-offs greater than 1-3/4 inch, prior to allowing traffic onto the paved surface. Temporary pavement transitions shall have a maximum slope of 20:1 or as approved by the engineer and be constructed on Kraft paper or other suitable bond breaker such that upon removal of the temporary pavement transition, a clean notch remains. The temporary transitions may be constructed of either cold mix or hot mix. A tack coat is required on the transition area prior to final paving.

The Contractor shall continuously maintain the temporary pavement until final paving. Each temporary transition shall be inspected by the Contractor and repaired as necessary to comply with these provisions at the end of each day including weekends and holidays.

Failure to comply with these provisions will result in a liquidated damage of $250 per day per transition and/or the cost of City crews making the repairs if necessary, to correct for public safety.

3. Layout

The Contractor shall layout and mark the location of the edges of the paving passes of the surface course to match the new layout of the lane lines. The layout shall be made at least 24 hours prior to paving. The layout shall be approved by the Engineer prior to paving.

If the striping is to remain unchanged, the edges of the paving passes shall conform to existing lane edges.

In all cases where practical, each lane shall be paved in a single pass. In tapered transition areas, the shoulder areas shall be paved first, then the through lane shall be paved immediately after the shoulder paving.

For paving which incorporates new quarterpoints or grade breaks due to keycuts or other conditions, the Contractor shall provide equipment capable of adjusting to the new surface profile at the appropriate locations. The profile adjustments shall be within twelve inches of the actual gradebreak or quarterpoint.

The Contractor shall take sufficient measurements during laydown to ensure that the full design hot mix asphalt layer depth is provided at each quarterpoint, gradebreak, or transition. Failure to provide the design depth at these areas will result in rejection of the work. Correction of this rejected work will include milling out the new hot mix asphalt from the road edge to the

centerline or nearest inside lane line and repaving. The minimum length of the milled and corrected area shall be fifty feet.

4. Tolerances

The finished hot mix asphalt surface shall be flush with or no greater than 1/4 inch (0.02 feet or 6 mm) above, the gutter lips. The finished pavement surface shall not be lower than the gutter lips.

The average pavement thickness shall be equal to the specified thickness for the project.

For total pavement thicknesses of less than four inches, the minimum allowable thickness will be 1/4 inch less than that specified.

For total pavement thicknesses of four inches or more, the minimum allowable thickness will be 1/2 inch less than that specified.

5. Automatic Screed Controls

For all main line street or roadway paving with single lane length exceeding 300 feet, automatic screed controls shall be required. Automatic screed controls shall not be required for the paving of parking lots, intersections, cul-de-sacs, alleyways or other irregular areas.

In addition to the requirements in Section 39-1.10 and 39-1.11 of the Standard Specifications, hot mix asphalt shall be placed with spreading equipment equipped with fully automatic screed and grade sensing controls which shall control the longitudinal grade of the screed. Automatic controls shall conform to and be operated in accordance with the provisions herein.

Unless approved otherwise, ski-type devices with a minimum length of 30 feet shall be used to provide a reference for the grade sensor. Skis shall be constructed and installed in such a manner that a reference to the average elevation of the existing pavement, along the length of the ski, is maintained at the sensor point. When placing surfacing adjacent to surfacing previously placed in conformance with these provisions, a joint matching shoe of adequate size and type to properly sense the grade of the previously placed mat may be used in lieu of the 30-foot ski.

The ski shall be mounted at a location which will provide an accurate reference for the surfacing being placed. This may require the ski to be mounted ahead of and inside the outer limits of the screed. Automatic cross slope control may be accomplished by use of a ski and grade sensor on each side of the paving machine.

Automatic screed controls shall be installed in such a manner that the occasional manual adjustments necessary to maintain the altitude of the screed parallel to the underlying pavement are readily accomplished. Automatic screed controls shall be installed so that with little or no delay, use of the automatic controls can be discontinued, and the screed controlled by manual methods.

If it is determined by the Engineer that the existing grade and cross slope are too irregular for the automatic controls to provide the quality of work required, the use of the automatic controls shall be discontinued, and the spreading equipment adjusted by manual methods. Use of automatic controls shall resume when the Engineer has determined that it is again practical and so orders.

6. Compacting

Rolling shall be performed as indicated in the referenced Caltrans specifications. The roller water shall contain a soap type compound to prevent sticking of the HMA material to the rollers. The soap type compound shall not damage the HMA or impede the bonding of layers.

The number of rollers required for each paving operation shall be such that all rolling for density can be completed before the temperature of the hot mix asphalt mixture drops below 240 degrees Fahrenheit.

Breakdown rolling shall commence when the hot mix asphalt is placed. Rolling shall be accomplished with the drive wheel forward and with the advance and return passes in the same line.

For leveling courses, breakdown rolling shall consist of three coverages with an 8 to 12-ton pneumatic roller followed by a finishing coverage with a steel wheel roller. The rolling may begin with a single pass of a steel wheel roller until the pneumatic has sufficient opportunity to warm up to avoid tracking and picking up material from the mat. The pneumatic roller tires shall be treated with a non-petroleum based product to prevent pickup. Failure to successfully provide for breakdown rolling with the pneumatic roller after a reasonable warm up time will be cause for termination of paving activities until the Contractor can provide equipment which will perform without pickup.

The Contractor shall have hand-compaction equipment immediately available for compacting all areas inaccessible to rollers. Hand-compaction shall be performed concurrently with breakdown rolling. If for any reason hand-compaction falls behind breakdown rolling, further placement of hot mix asphalt shall be suspended until hand-compaction is caught up. Hand-compaction includes vibraplates and hand tampers. Hand torches shall be available for rework of areas which have cooled.

After compaction, the surface texture of all hand work areas shall match the surface texture of the machine placed mat. Any coarse or segregated areas shall be corrected immediately upon discovery. Failure to immediately address these areas shall cause suspension of hot mix asphalt placement until the areas are satisfactorily addressed, unless otherwise allowed by the Engineer.

7. Contractor Quality Control

The HMA shall be verified by the engineer prior to placement on the jobsite. If agreed to by the Contractor and the Engineer, the production start-up may be used for verification. If the production start-up is used for verification the Engineer may require removal and replacement of the HMA, at their discretion, in the event of verification failure.

Contractor quality control testing is required. If the Contractor fails to submit quality control results to the engineer within 72 hours of HMA placement, the Contractor waives all rights to dispute the Engineer’s results. In the event of asphalt binder or Hamburg wheel track testing by the Engineer, the Contractor has 5 days to submit their test results from the time the Engineer informs the Contractor that they are performing testing or the Contractor waves the right to dispute the Engineer’s results.

The Engineer shall test for conformance with aggregate quality characteristics at the beginning of the project.

The Engineer shall test air void content, Hveem stability, and voids in mineral aggregate (VMA) a minimum of once per day.

The Engineer may sample the hot mix asphalt from truck beds at the plant, from the hopper of the paving machine, or from the mat behind the paver at the discretion of the Engineer. The Contractor shall facilitate the sampling process.

8. Engineer's Acceptance

A. General

The City shall be notified 48-hours prior to scheduling pavement placement so that Quality Assurance personnel can be scheduled.

B. Materials Acceptance

The Engineer may withhold acceptance in the event of any failing test result until the Contractor has addressed the failing material to the Engineer's satisfaction.

C. Compaction Acceptance

Sublots to determine compaction testing shall be based on the following:

- Each 750 tons, or part thereof, placed on an individual street in a paving day. If over 750 tons are placed in a single paving day on an individual street, up to 150 tons over 750 tons can be moved in to the previous 750 ton sublot.
- If multiple streets are paved in a day, each street will be considered its own sublot with multiple sublots on streets where greater than 750 tons are placed.

The in-place density shall be between 92.0 percent and 97.0 percent of maximum theoretical unit weight using a nuclear gauge. Gauge compaction testing shall be performed in accordance with CTM 375. Final compaction is based on the average nuclear gauge results for the sublot. The nuclear gauge will be core correlated the first day of paving.

If nuclear gauge compaction testing results are failing, the contractor can request coring to verify the results. Three cores will be sampled for each sublot and the average of the three cores for each sublot will determine the in-place density. The core locations will be determined using random sampling charts in CTM 375. The engineer will mark the core locations.

Cores may be taken up to 5 calendar days after placement and may be 4 or 6 inches in diameter. The Engineer shall provide results within 3 working days of receiving the cores.

Passing cores shall be paid for by the owner. Failing cores will be paid for by the Contractor. If the core testing produces both passing and failing cores, the cost will be prorated between the contractor and the owner.

Contractor shall core the full depth of the new overlay and existing asphalt layers and backfill the cores holes with rapid set concrete. The cores shall be sawcut at the new overlay line prior to testing. Failure to backfill the core holes on the same day as the coring is performed will subject the Contractor to liquidated damages in the amount of $250 per day per location.

For the percent of maximum theoretical density, the following table shall apply to deductions for average compaction of a sublot:

Reduced Payment Factors for Percent of Maximum Theoretical Density

HMA Type A Percent of Maximum Theoretical Density	Reduced Payment Factor	HMA Type A 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

19.05 MEASUREMENT AND PAYMENT

The contract price paid per ton identified in the bid schedule **Bid Item 17 "Hot Mix Asphalt (TYPE A)"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in removing existing trees as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 20 – AGGREGATE BASE

20.01 GENERAL

The work to be performed shall consist of furnishing, spreading, and compacting aggregate base course for pavements as indicated.

20.02 SUBMITTALS

Contractor shall provide submittal for each Respective manufacturer's product data for manufactured products.

20.03 MATERIALS

1. Aggregate Base Material - Class 2 aggregate base shall be free of vegetable matter and other deleterious substances. Coarse aggregate, material contained on the No. 4 sieve, shall consist of material of which 25 percent by weight shall be crushed particles as determined by California Test Method No. 205. Class 2 aggregate base shall conform to one of the following gradings, determined in accordance with California Test Method No. 202:

   Percentage Passing Sieves for ¾" maximum

   Sieve Sizes

   2 inch ----

1 ½ inch	----
1 inch	100
3/4 inch	90-100
No. 4	35-60
No. 30	10-30
No. 200	2-9

Class 2 aggregate base shall conform to the following additional requirements:

Tests	Test Method No. Calif.	Requirements
Resistance (R-Value)	301	78 min.
Sand Equivalent	217	22 min.

Tests	Test Method No. Calif.	Requirements
Durability Index	229	35 min.

Contractor may us recycled class 2 aggregate base for all underground applications. Any class 2 aggregate base used on the surface must be virgin.

Source Quality Control - Submit certificate of compliance for approval prior to installation of material.

20.04 CONSTRUCTION

1. Examination - Call for an inspection by the Engineer and obtain written acceptance of the prepared subgrade or subbase before proceeding with the placement of aggregate base course.

The subgrade or subbase to receive aggregate base course, immediately prior to spreading, shall conform to the compaction and elevation tolerances indicated for the material involved and shall be free of standing water and loose or extraneous material.

2. Installation Standards - Aggregate base course shall be applied over the prepared subgrade or subbase and compacted in accordance with Section 26 of the Revised Standard Specifications or as approved by the Geotechnical Engineer

Aggregate base course shall be minimum uniform thickness after compaction of dimensions indicated. Aggregate base shall be used to raise grade for new concrete flatwork or where

existing base material is unsuitable as determined by the geotechnical engineer. Unsuitable material is defined as material the Engineer determines to be:

1. of such unstable nature as to be incapable of being compacted to specified density using ordinary methods at optimum moisture content; or

2. too wet to be properly compacted and circumstances prevent suitable in-place drying prior to incorporation into the work; or

3. otherwise unsuitable for the planned use.

3. Spreading of Material - Aggregate for base course shall be delivered as uniform mixture of fine and coarse aggregate and shall be spread in layers without segregation.

Aggregate base course material shall be free from pockets of large and fine material. Segregated materials shall be remixed until uniform.

Aggregate base material shall be moisture-conditioned to near optimum moisture content in accordance with the applicable requirements of Section 17 of the Revised Standard Specifications.

Aggregate base course six inches and less in thickness may be spread and compacted in one layer. For thicknesses greater than six inches, the base course aggregate shall be spread and compacted in two or more layers of uniform thickness not greater than six inches each.

4.Compaction - Relative compaction of each layer of compacted aggregate base material shall be not less than 95 percent based on maximum dry density as determined by ASTM D1557 or as noted in the design plan.

Thickness of finished base course shall not vary more than 3/4 inch from the indicated thickness at any point. Base which does not conform to this requirement shall be reshaped or reworked, watered, and recompacted to achieve compliance with specified requirements.

The surface of the finished aggregate base course at any point shall not vary more than 3/4 inch above or below the indicated grade.

5.Field Quality Control - Perform field tests in accordance with California Test Method No. 216 as directed by the Geotechnical Engineer to determine compliance with specified requirements for density and compaction of aggregate base material.

20.05 MEASUREMENT AND PAYMENT

The contract per ton paid for **Bid Item 18 "Class 2 Aggregate Base"** shall include full compensation for all labor, materials, tools, equipment, and incidentals to do the work involved with material submittals, construction and disposal, subgrade preparation, moisture-conditioning, compaction, and independent quality control testing and all other items pertaining to aggregate base as shown on the plans, as specified by the current edition of the Caltrans Standard Specifications, these special specifications, and as directed by the Engineer.

Payment for aggregate base involved within the work under **SECTION NO.24 – MINOR CONCRETE** of these specifications shall be considered as included in the contract prices paid for within bid items under **SECTION NO.24 – MINOR CONCRETE** and no additional compensation will be allowed therefor.

END OF SECTION

SECTION NO. 21 – STAMPED ASPHALT (REVOCABLE ITEM)

21.01 GENERAL

Decorative inlaid asphalt shall consist of a durable inlaid aggregate reinforced preformed thermoplastic pavement marking system (herein "System") that provides a textured, highly attractive and durable topical treatment to the surface of the asphalt pavement.

The System is intended for use on asphalt pavements to create traffic calming solutions for decorative crosswalks, medians, and intersections. It is applied to pavement to create functional and decorative crosswalks and intersections, as shown on the Contract Drawings.

All System materials shall be produced under a quality system as specified in this section and designed to provide durability, load carrying capacity and architectural compatibility with the environment. All raw materials shall be carefully graded for consistency and quality to obtain the highest standards.

The System shall be installed to the existing substrate.

Only accredited decorative inlaid asphalt system installers authorized by the manufacturers of the decorative inlaid asphalt product may perform this work.

21.02 SUBMITTALS

1. Product Data: For each type of product per manufacturer's offering.

2. Manufacturer Data: System type and product type

3. Samples for Initial Selection: For each type of product requiring color selection. Samples for Verification: For each pattern and color in manufacturer's standard sizes.

4. The Accredited Installer shall provide written proof of their accreditation.

5. The Accredited Installer shall gain confirmation of correct stamping pattern(s) and colors from the City Engineer prior to starting the Work.

6. The Accredited Installer shall supply three references of work of a similar nature.

7. The System manufacturer must be IS09001:2015 certified for design, development and manufacturing of preformed thermoplastic, and provide proof of current certification.

8. Shop Drawings: Indicate inlaid patterns, colors, and dimensions to adjacent work

21.03 QUALITY ASSURANCE

A. Installer Qualifications: Inlaid-asphalt manufacturer's authorized installer who is trained and approved for installation of inlaid asphalt required for this Project.

B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of these specification and state standards for inlaid asphalt work.

21.04 MATERIALS

1. Manufacturer

A. Basis of Design -Ennis-Flint, Inc. TrafficScapes® - Duratherm® inlaid surface system. Contact www.ppg.com

2. Decorative Inlaid Asphalt Material

A. Preformed Thermoplastic Material: Must be composed of an ester modified rosin impervious to degradation by motor fuels, lubricants, etc. in conjunction with aggregates, pigments, binders, and anti-skid/anti-slip elements. Pigments and anti-skid/anti-slip elements must be uniformly distributed throughout the material. The material conforms to AASHTO designation M249, with the exception of the relevant differences due to the

B. Material being supplied in a preformed state, being non-reflective, and potentially being of a color different from white or yellow.

C. The System shall utilize a resilient, aggregate reinforced preformed thermoplastic product which contains a minimum of thirty percent (30%) intermixed anti-skid/anti-slip elements and where the top surface contains anti- skid/anti-slip elements. These anti-skid/anti-slip elements must have a minimum hardness of 6 (Mohs scale).

D. The System must be resistant to the detrimental effects of motor fuels, antifreeze, lubricants, hydraulic fluids, etc.

E. Pigments:

a. White: The material shall be manufactured with sufficient titanium dioxide pigment to meet FHWA Docket No. FHWA-99-6190 Table 5 and Table 6 as revised and corrected.

b. Other Colors: The pigment system must not contain heavy metals nor any carcinogen, as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant Federal Regulations.

F. Skid Resistance: The surface of the material shall contain factory applied anti-skid/anti- slip elements with a minimum hardness of 6 (Mohs scale). Upon application the material shall provide a minimum skid resistance value of 60 BPN when tested according to ASTM E 303.

G. Slip Resistance:The surface of the material shall contain factory applied anti-skid/anti-slip elements with a minimum hardness of 6 (Mohs scale). Upon application the material shall provide a minimum static friction of coefficient of 0.6 when tested according to ASTM C 1028 (wet and dry), and a minimum static coefficient of friction of 0.6 when tested according to ASTM D 2047.

H. Thickness: The material must be supplied at a minimum thickness of 90 mil (2.3mm).

I. Environmental Resistance: The material must be resistant to deterioration due to exposure to sunlight, water, salt or adverse weather conditions and impervious to oil and gasoline.

3. Decorative Inlaid Asphalt Material Stamping Template

A. A plastic template is required in the execution of the System. The template is used after the pre-heating of the asphalt surface and impressing the defined patterns prior to the preformed

thermoplastic is applied. The plastic template standard thickness will be 150mil (3.8mm) and a custom thickness of 188mil (4.8mm). The plastic templates are distributed by the System manufacturer.

4. Heating Equipment

A. System-specific reciprocating infrared heating equipment is designed specifically to elevate the temperature of the preformed thermoplastic material and asphalt pavement without adversely affecting it. The primary heating unit must employ a bank of propane-fired infrared heaters, mounted on a track device that allows the heater bank to reciprocate back and forth over a designated area, thereby allowing the operator to monitor the temperature of the preformed thermoplastic at all times during the pavement heating process.

B. A smaller, mobile infrared heater is designed specifically to heat areas such as borders and narrow areas that are inaccessible to the primary heaters. This secondary heater also allows the operator to monitor the temperature of the preformed thermoplastic at all times during the heating process.

5. Materials Aggregate

A. Supplemental anti-skid/anti-slip elements to be applied to the surface of the molten preformed thermoplastic as needed, if the factory applied anti-skid/anti-slip elements embed too deeply into the surface of the molten preformed thermoplastic material during the heating process. (Embedded aggregate is exposed upon wear for extended skid resistance.) The aggregate is distributed by the System manufacturer.

6. Patterns and Color

A. Patterns and colors are described below:

a. Decorative inlaid asphalt

Pattern: Herringbone

Pattern Color: Standard Heritage Red

B. Contractor shall verify all colors and patterns with owner's representative prior to placement.

7. Shelf and Storage

A. The shelf life of decorative inlaid asphalt materials is two years provided it is protected from the weather, specifically UV degradation and rain. The materials are to be stored in their original packaging and kept dry under cover and or as per manufacturer's specifications.

expense.

21.05 EXECUTION

1. Environmental Limitations

Proceed with inlaid pavement only when air temperature is at least 45 deg F (7.2 deg C) and rising. Proceed only if no precipitation is expected. Ensure there is no moisture in the substrate prior to application. Ground should not have any frost or moisture present. High winds could also affect the installation of the impressed material.

2. Examination

A. Verify that pavement is dry and in suitable condition to begin the impressing process according to manufacturer's written instructions.

B. Proceed with asphalt impressing only after unsatisfactory conditions have been corrected.

C. Verify that utilities, traffic loop detectors, and other items requiring a cut and installation beneath the asphalt surface have been completed and that asphalt surface has been repaired flush with adjacent asphalt prior to beginning installation of impressed asphalt.

3. Decorative Inlaid Asphalt Markings

A. The System must be able to be applied to asphalt surfaces with pre-heating the application surface to a specific temperature.

B. The System is applied to asphalt pavement primarily using reciprocating infrared heating equipment. An approved hand-held propane heat torch distributed by the System manufacturer shall be used to heat isolated areas of the preformed thermoplastic.

C. Specialized handheld finishing tools, aggregate and vibratory plate compactors are used as part of the installation process

D. The aggregate reinforced preformed thermoplastic is typically supplied in panels measuring 2 ft. x 2 ft. [±Ys in.] (.61m x .6 lm [±3mm]).

E. The System is available in a variety of standard colors and patterns. Color can be used to create patterns within the crosswalk area to reflect the typical white crosswalk for additional visibility and awareness.

F. The material must be able to be applied at ambient and road temperatures with a minimum temperature of 45°F (7°C) and rising.

G. The substrate is pre-heated to the required temperature prior to stamping the Durathenn template The Duratherm template is stamped using a vibratory plate compactor, the templates are removed from the asphalt surface, and the Duratherm preformed inlaid thermoplastic material is placed in the area where the stamping took place and positioned properly on the asphalt substrate with the aggregate side facing up. The preformed thermoplastic is then heated to the required melting temperature. Additional aggregate may be applied to the preformed thermoplastic surface as needed following the melting process.

H. The preformed thermoplastic material is then allowed to cool thoroughly before being opened to vehicle or pedestrian traffic. (Consult the manufacturer's published application procedures for complete information.) The timing of opening traffic will be subject to exterior temperature conditions. More time may be required in hot weather. The Accredited Installer can advise when the work is ready for traffic.

I. Install Premark® White 125mil prefonned thermoplastic material with glass beads as the transverse lines on the outside areas of the installed Duratherm® marking system as required to meet MUTCD requirements.

J. Duratherm inlaid surface system may not be applied to Portland concrete cement surfaces.

4. Inlaid Asphalt

A. General: Inlaid asphalt according to manufacturer's written instructions, using manufacturer's recommended equipment.

B. PRE-CONDITIONS: Decorative inlaid asphalt shall be installed over new pavement. The pavement must be firm, stable and in excellent condition; it must be free from defects such as cracks, settlement, visible seams, ruts, bird baths and spalling.

a. Cracking, settlement and other deficiencies of the substrate will likely reflect through the decorative preformed thermoplastic.:. Good and proper construction procedures for the installation of the substrate must be followed in order to mitigate cracking of decorative preformed thermoplastic.

b. Surfaces with a high degree of porosity should be avoided due to the problems associated with entrapped water.

c. Surfaces that may be subject to uncontrolled movement in either a horizontal or vertical direction shall be avoided as there may be a risk of reflective cracking through to the decorative preformed thermoplastic. Notify the engineer if these conditions are present before installing decorative preformed thermoplastic.

5. Preparing of the Substrate

A. All pavement substrates must be of high quality and stable for the installation of decorative inlaid asphalt.

B. This Section is to be used as a guide to ensure a high-quality pavement substrate is provided and ready for the installation of the decorative System. It does not supersede other specifications pertaining to this Work, nor does it replace recommendations made by the engineer of record for this Work.

a. The base and sub-grade over which new pavement is installed must be firm and stable.

b. The pavement mix must be designed for the intended use.

c. The pavement must be installed in accordance with proper placement practices and these specifications.

d. The asphalt pavement must be permitted to cure properly before installing decorative impressed asphalt.

6. Surface Preparation

A. The pavement surface shall be dry and clean: free of all dirt, debris, salts, concrete admixtures and any chemical residues.

a. Bituminous residue must be removed from new asphalt pavement surface prior to installation of decorative inlaid asphalt.

b. Removal of contaminants may be done by brooming, compressed air, pressure washing (moisture must be removed and the surface dry as noted above) or, if necessary, light-grit blasting. Wire brush may be used to remove loose or powdery materials.

7. Installation of Decorative Inlaid Asphalt

Decorative impressed asphalt System is to be installed only by an Accredited Installer.

8. Packaging

A. The Duratherm® preformed thermoplastic material shall be packaged in cardboard cartons with a plastic sheet between each layer of preformed thermoplastic. The cartons in which the Duratherm marking system is packed shall be non-returnable and shall not exceed 25 in. (.64m) in length and 25 in. (.64m) in width. The cartons shall be labeled for ease of identification. The weight of the individual carton must not exceed seventy (70) pounds (32 kg). A protective film around the carton must be applied to protect the Duratherm preformed thermoplastic material from rain or premature aging.

21.06 MEASUREMENT AND PAYMENT

The contract per square foot price paid for **Bid Item 19 "Stamped Asphalt"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in applying slurry seal complete in place, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

This is a **"Revocable Bid Item"** may be revoked at any time, including before, during or after bid opening and awarded at sole discretion of the City.

END OF SECTION

SECTION NO. 22 – STORM DRAINAGE FACILITIES

22.01 SCOPE OF WORK

The work shall consist of furnishing and installing Reinforced Concrete Pipe (RCP) storm drain conduit, Type A catch basin, Type C catch basin, maintenance hole, sidewalk underdrain, and curb inlet as shown on the plans and described in these specifications. The work shall also include the connection of the new storm drainage piping to the existing system at the locations shown on the plans.

22.02 MATERIALS

1. Structures

Storm drain structures shall conform to the requirements of Section 44 – Retaining Walls and Drainage Structures of the Standard Specifications for the Cities and County of Marin (June

1992). Maintenance holes and inlets shall be constructed at the locations and grades as indicated on the plans.

2. Reinforced Concrete Pipe

RCP storm drain shall conform to the requirements of Section 54 – Storm Conduits of the Standard Specifications for the Cities and County of Marin (June 1992). RCP shall be manufactured in accordance with ASTM C76 and other applicable provisions of ASTM C361, with rubber-gasketed compression joints. The joints shall be all concrete bell and spigot type using a round O-ring rubber gasket seal. Upon closure of the joint, the gasket shall be self-contained and compressed in a groove on the spigot end of the pipe. Mortared joints will not be acceptable. At all times, plant facilities will be made available for the Engineer's inspection. In any case, all required testing and certifications of testing compliance in conformance with referenced ASTM Specifications shall be furnished to the Engineer prior to the time of pipe delivery. Pipe may be made by centrically spun, packer head or vertically cast production methods. Machine tamped production methods will not be acceptable. If elliptically reinforced pipe is furnished, it shall be clearly marked for proper installation. Unless otherwise specified in the Special Provisions or shown on the Plans, provide Class III RCP pipe.

3. Pipe Bedding

Pipe bedding and backfill for storm drain shall be placed in accordance with Marin County UCS Trench Details (May 2018). Unless otherwise specified, pipe bedding and initial backfill shall be ¾" drain rock with the following gradation:

SIEVE SIZE	PERCENT PASSING
1" (25 mm)	100
3/4" (19 mm)	85-100
1/2" (12.5 mm)	10-50
3/8" (9.5 mm)	5-20
No. 4 (4.75 mm)	<3
No. 8 (2.36 mm)	<2
No. 30 (0.60 mm)	<2
No. 100 (0.15 mm)	<2

22.03 EXECUTION

1. Catch Basins, Inlets, and Maintenance Holes

Catch basins, inlets, and maintenance holes shall be constructed or modified at the location and of the type indicated on the plans or as directed by the Engineer and shall be verified on the site by the Contractor.

Catch basins and drop inlets shall be concrete structures and shall be fitted with frames and grates, as shown for the specified type of structure.

2. Pipe Connections

Pipe connection to existing maintenance hole shall be made in such a manner that the finish work conforms to the applicable requirements specified for new maintenance holes, including all necessary concrete work, cutting and shaping.

3. Excavation and Backfill

Excavation and backfill shall be as specified in Section 51 – Construction in Existing Streets and Section 52 – Excavation and Backfill of the Standard Specifications for the Cities and County of Marin (June 1992).

All pipe materials and accessories shall be on site prior to excavation. Unless otherwise specifically approved by Engineer, the length of open trench shall not exceed one hundred feet (100') ahead of pipe laying, and no more than twenty-five feet (25') of excavated trench shall remain un-backfilled at end of day.

Excavations in public streets shall be coordinated so as to minimize traffic interference. Trenching in paved areas shall be saw cut or scored and broken ahead of trenching operations and shall be cut or trimmed to a neat edge after backfilling. Any pavement damaged outside of the cuts shall be saw cut and restored prior to final paving.

Roots four inches (4") or greater found during excavation shall be exposed but not severed and shall be wrapped in burlap to protect them while exposed. Roots two to four inches (2"-4") in diameter that are severed in the course of construction shall be neatly trimmed and coated with a heavy coat of tree seal. In the event major roots of smaller trees are damaged or severed the Engineer may require the Contractor to consult with a qualified arborist to determine the proper method to protect the trees.

Trenches must be kept free from water while the pipe or structures are being installed, concrete is setting and until backfill has progressed to a sufficient height to anchor the work against possible flotation or leakage.

4. Sheeting and Shoring

All excavations shall be supported as set forth in the rules, orders, and regulations of the California Department of Industrial Relations, Division of Industrial Accidents. All shoring, sheeting, and bracing shall conform to the requirements of the State or local agents having jurisdiction over such matters. Shoring, sheeting, and bracing shall be removed in a manner that will protect the workers and prevent caving of banks and damage to the pipe, excavation, backfill or adjacent property. No sheeting will be withdrawn from below the top of the pipe after completion of backfill to that level.

For trenches and excavations five feet (5') or more in depth, the Contractor shall submit to the Engineer a detailed plan, and any revisions thereto, showing design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazards of caving ground.

Such plan shall be submitted at least ten (10) working days before the Contractor intends to begin trenching or do excavation work.

If such plan varies from the shoring system standards established by the Construction Safety Orders of the Division of Industry Safety, the plan shall be prepared, sealed and signed by a Civil or Structural Engineer registered in California. Signed and sealed copies of calculations necessary to qualify the system shall also be submitted.

Nothing herein shall be deemed to allow the use of shoring, sloping, or protective system less effective than that required by the Construction Safety Orders of the Division of Industrial Safety.

Payment for sheeting and shoring shall be included in the unit price for the various other items of work and no additional compensation shall be allowed therefor.

5. Subsurface Drains

Subsurface drains shall be tied to drain inlets or maintenance holes as shown on the Plans.

6. Testing

The Contractor shall have all storm drain lines cleared by either mechanical or hydraulic balling before a video inspection is performed. A screen trap shall be installed at the downstream maintenance hole of the line to be cleared to prevent debris from entering existing mains.

The Contractor shall pay for all associated testing costs. All defects and leaks noted shall be corrected by the Contractor to the satisfaction of the Engineer.

7. Setting Maintenance Hole Frames and Covers to Grade

All maintenance hole castings shall be raised to new grade by bricks, and mortar and/or Pre-Cast Grade Rings in compliance with these specifications, as outlined for a new casting, after street paving has been replaced.

8. Abandonment of Storm Drain Pipes and Maintenance Holes

Remove existing inlets as necessary for construction. Native material shall be compacted to ninety-five percent (95%) relative compaction. Frames and covers not to be reused shall be delivered to the City

Twelve-inch (12") and larger storm drain pipes to be abandoned shall be plugged and filled with slurry mixture containing a minimum of two (2) sacks of Type II cement per cubic yard of mixture.

Filling with slurry shall be accomplished by pumping or gravity, and will be checked by comparing the volume of the pipe with the volume of mixture used. If the volume is more than 10 percent (10%) greater than the actual volume of slurry used, the Contractor shall excavate two (2) or more exploratory holes where directed by the Engineer, and shall do all work necessary to satisfactorily fill any encountered voids.

Ten-inch (10") and smaller pipes to be abandoned shall be plugged with a mortar plug not less than twelve inches (12") in length.

9. Sidewalk Underdrain

Sidewalk underdrain shall conform to Marin County Uniform Construction Standards and Caltrans Standard Specifications Section 68. Contractor shall verify all existing utilities prior to excavation. Trench shall be excavated to line and grade with a minimum 1% slope. Place a 4" bedding of Class 2 permeable material per Caltrans Section 68-1.025.

Install perforated PVC SDR-35 pipe with perforations facing down, centered in trench. Wrap pipe in non-woven geotextile filter fabric (e.g., Mirafi 140N). Pipe joints shall be watertight using approved couplings.

Backfill trench with Class 2 permeable material to 2" above the pipe. Fold fabric over top of gravel. Final backfill with compacted native material or Class 2 aggregate base to 95% compaction per Caltrans Section 19. Connect to catch basin, curb drain, or daylight per plans. Provide cleanouts as shown or directed.

Request inspection prior to backfill. Upon approval, install sidewalk per plan and these specifications.

22.04 MEASUREMENT AND PAYMENT

The contract per each paid for **Bid Item 20 “Install Grated Drop Inlet Top** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in installing new maintenance hole covers in place, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract per each paid for **Bid Item 21 “Install Modified Type “A” Catch BasinTop”** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in installing catch basins in place, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract per each paid for **Bid Item 22 “Install Modified Type “C” Catch Basin Top ”** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved modifying catch basins, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract per each paid for **Bid Item 23 “Install Sidewalk Underdrain”** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, installation of joints, and incidentals and for doing all the work involved installing sidewalk underdrain, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 23 – ADJUSTING EXISTING UTILITY FACILITIES TO GRADE

23.01 GENERAL

This work shall consist of raising or adjusting existing utility facilities such as guy wire connections, maintenance holes, valve boxes, sewer clean-outs, monument boxes, electrical, water meter boxes, and gas valve covers to the finished grade of the resurfaced asphalt pavement.

The Contractor is responsible for obtaining and purchasing from the appropriate governing jurisdiction any required permits associated with lowering or adjusting to finish grade all utility frames and covers within the limits of work.

23.02 EXECUTION

The Contractor shall properly locate and tie all existing facilities to be lowered and raised in advance of cold planing and paving operations. A minimum of 2 reference points shall be provided on face or top of curb showing distance to utility that is lowered or to be adjusted, and utility type. After all facilities have been adjusted to finished grade, the Contractor shall remove all reference points to the satisfaction of the City Engineer.

Care shall be taken to keep frames and covers clean. The Contractor shall completely protect with heavy plastic or other suitable material all utility covers or other items that are visible on the surface and will be covered by their operations. This shall be completed prior to the start of operations and approved by the Engineer. Any materials that adhere to the frames and covers shall be removed.

Facilities damaged by the Contractor shall be replaced at the Contractor's expense. Facilities (box and lid or frame and cover) found existing in a damaged condition, and reported to the Engineer before disturbing, shall be replaced by the Contractor with materials furnished by the Owner.

The Contractor shall notify owners of private utility facilities seven days prior to the start of the resurfacing work. Such owners may request the contractor to lower and raise the private facilities.

Lowering

Lower frames and covers of existing facilities before cold planning to sufficient depth so that cold planing equipment passes safely over the top of the lowered frame and cover without damaging it. Temporarily fill utility depression with compacted hot-mix asphalt (HMA) before opening the lanes to public traffic. The Contractor shall be responsible for maintaining any temporary HMA material over these facilities until the final paving surface is installed.

1. Where frames and covers cannot be lowered prior to cold planning, cold planer equipment shall "pick-up" and "set-down" on either side of the covers. Non-milled asphalt pavement around lid or cover shall be removed by other means to the specified depth. Lids and covers shall then be protected utilizing the following alternatives: Ramp section (cut-back) around frame and cover and paint white.

2. Place lighted Portable Barricade over frame and cover (only allowed if outside of traffic lane and if approved by the Engineer).

Adjustments and Tolerances

The concrete around these adjusted facilities in the roadway shall be brought up to 1-1/2" below the finished pavement elevation. After concrete has been placed and cured, 3/8" HMA (Type A) shall be used to raise the final surface adjacent to the adjusted utility covers to match the finished pavement elevation.

The surface of the adjusted facilities shall be true to the new pavement surface to within a 1/8-inch deviation. This tolerance shall apply in a single direction only, either up or down. In addition, the adjusted facility shall not vary to the high tolerance on one side and the low tolerance on the other (i.e. the total aggregate tolerance on both sides shall be limited to the 1/8-inch variation). This variation shall apply to the adjacent patch paving around the facility such that neither the paving nor facility vary by more than the stated tolerances.

Portland cement concrete used for adjusting coves shall be Class B, 5 sack minor concrete conforming to the provisions in the State Standard Specifications Section 51, "Concrete Structures," and shall be 1-inch maximum grading as specified in Section 90-1.02C(4)(d), "Combined Aggregate Grading" of the State Standard Specifications.

Mortar used in resetting maintenance hole covers shall conform to the provision in Section 51-1.02F, "Mortar" of the Standard Specifications.

Dirt, rocks or debris shall not be permitted to enter sewer or storm drain lines. When maintenance hole adjustment involves excavation or concrete removal, a temporary cover shall be placed to prevent entry of material into the maintenance hole, sewer and storm drain pipes.

During sealing or paving operations, all surface structures shall be protected and no adhesive materials shall be permitted to fill the joint between the frame and cover.

Schedule

All facilities shall be adjusted to finish grade within 72 hours after the placement of the final surface paving. If several lifts of pavement are to be placed, the facilities shall be raised if the paving operation ceases for more than 72 hours, or as approved by the Engineer.

Failure to comply with these schedule provisions shall incur a liquidated damage of $500 per utility cover per day.

23.03 MEASUREMENT AND PAYMENT

The contract per each paid for **Bid Item 24 "Adjust Maintenance Hole Cover to Finish Grade"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in adjusting maintenance hole covers to finish grade, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract per each paid for **Bid Item 25 "Adjust Handhole to Finish Grade"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in handholes to finish grade, as shown on the

plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

The contract per each paid for **Bid Item 26 "Adjust Pullbox to Grade"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in adjusting pullboxes to finish grade, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 24 – MINOR CONCRETE

24.01 GENERAL

Existing and new concrete facilities including curbs, curb and gutters, valley gutters, sidewalk, median island and curb ramps shall be removed and replaced or constructed at the locations indicated on the plans or as directed by the Engineer.

Concrete curbs, sidewalks, gutters, curb ramps and detectable warning surfaces shall comply with Section 73 Concrete Curbs and Sidewalks of the Standard Specifications and Marin UCS Drawing No. 105. Where existing PCC facilities do not match Marin County Standards they must be replaced in-kind.

24.02 MATERIALS

1. General

All section references are to the 2024 Caltrans Standard Specifications.

Portland Cement Concrete: PCC for concrete pavement must comply with Section 90-1 of the Standard Specifications.

Minor Concrete for curbs, curb and gutter, sidewalks must comply with Section 90-2 Minor Concrete of the Standard Specifications.

2. Concrete mix design

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

General Concrete Facilities including curb, gutter, sidewalk, access ramps, residential driveways, etc. shall meet the following requirements:

Compressive Strength: 4000 psi @ 28 days

Polypropylene Fiber Reinforcement: 1.5 lbs/cy (0.01% by volume),

3/4 inch minimum length

Maximum Slump: 5 inches

The Contractor shall be responsible for all costs associated with the required mix design.

3. Quality control / Acceptance testing

Field testing shall include testing for concrete slump as per ASTM C-143 and compressive strength (C39). Such testing shall be at a frequency determined by the Engineer and shall be performed by the Owner's laboratory at the Owner's expense. The Contractor shall furnish the concrete necessary for casting test cylinders.

4. Aggregate Base

Aggregate Base needed for installation of minor concrete shall comply with **SECTION NO.20 – AGGREGATE BASE** as specified within these specifications.

Aggregate base shall be Class 2, 3/4" maximum. When the aggregate base is constructed in more than one layer, the previously constructed layer shall be cleaned of loose and foreign matter by sweeping with power sweepers or power brooms, except that hand brooms may be used in areas where power cleaning is not practicable. Adequate drainage shall be provided during the entire period of construction to prevent water from collecting or standing on the area to be covered with aggregate base.

5. Lightweight Fill

Lightweight backfill shall meet the following gradation:

Sieve Size	Percent Passing
1-inch	100
3/4-inch	80-100
3/8-inch	10-50
No. 4	0-15
No. 100	0-5

The dry loose unit weight of lightweight backfill shall be less than 65 pcf. The compacted in-place density shall be less than 85 pcf as measured in accordance with ASTM D-698. Lightweight backfill shall be placed in layers not to exceed 12-inches, measured prior to compaction. Each layer shall be compacted using a vibratory compactor. Lightweight aggregate shall have a proven record of durability and be non-corrosive.

6. Detectable warning surface

The contractor shall furnish and install detectable warning surface material on curb ramps in conformance with Caltrans Std. A88A (7-19-13 Update or most recent). On all new concrete construction, detectable warning surface shall be 'wet-set' system embedded into new concrete. Surface applied or 'mat' systems for detectable warning surface material only allowed if prior approval is made by the City's Engineer.

24.03 EXECUTION

1. General

All work shall conform to the provisions of Section 90 of the Standard Specifications. All curb ramps shall comply with Title 24 and current UBC requirements.

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.

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.

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

Commercial driveway and alley approaches, including the adjacent curb and gutter section, shall be removed and replaced within twenty-four hours. Curing time shall be seventy-two hours.

2. 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 concrete splash 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.

3. Subgrade

After the subgrade is prepared, moisture conditioned, and compacted to 90% relative compaction at zero to three percent over optimum, 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.

4. 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.

5. 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.

6. Placing and finishing

A. General

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

B. Strikeoff, Consolidation, and Finishing

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.

C. 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.

D. 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 hot mix asphalt.

E. 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 eighteen inch dowels shall be used with additional dowels placed every twenty-four 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.

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.

7. 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

For pavements to be overlayed or resurfaced, the aggregate base and hot mix asphalt may be replaced with cement sand slurry in conformance to Section 19-3.02D, “Slurry Cement Backfill”, of the Standard Specifications, or CLSM.

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 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.

8. Curb Ramps

Curb ramps shall be constructed in general conformance with Caltrans Standard Details A88A or A88B. Curb ramp construction will typically include removal and replacement of sidewalk, curb and gutter adjacent to new ramp, and installation of detectable warning surface (truncated domes). Truncated dome material shall be Safety Yellow in color, and shall be a set-in-concrete style of truncated domes. No surface-applied matting systems (i.e. glued and screwed) style of DWS shall be allowed.

At those locations where box lids fall within the area of the detectable warning surface the Contractor shall present solution(s) for installation of truncated domes on the lid surface such that a continuous field of domes is maintained as specified in the standard specifications. The City will review proposed solutions and approve those method(s) which are found to be suitable prior to implementation by the Contractor.

The Contractor’s duties as part of curb ramp construction shall include coordinating with utility company representatives for those locations where existing utility boxes fall within the limits of new ramp and/or sidewalk construction. Coordination efforts should be made early on in the Contract for those items which may require a long lead-in time or may involve significant interaction with utility company personnel.

Limits of removal and replacement work shall be determined by the Contractor at each curb ramp location.

9. Thickened Concrete Edge

Thickened Concrete Edge shall be constructed as indicated in the plans and directed by the City Engineer or designee. All Work shall be done to the satisfaction of the City Engineer or designee and all subgrade shall meet the acceptance of the designated representative of the Geotechnical Engineer.

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

Bar reinforcement to be ASTM A615, Grade 60.

Contractor will need to remove existing fence before beginning the construction of the thickened concrete edge.

10. Median Island

Median Island shall be constructed as indicated in the plans and directed by the City Engineer or designee. All Work shall be done to the satisfaction of the City Engineer or designee and all subgrade shall meet the acceptance of the designated representative of the Geotechnical Engineer.

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

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

Contractor shall provide submittal for each Respective manufacturer's product data for manufactured products.

24.04 MEASUREMENT AND PAYMENT

The contract price paid per lineal foot identified in the bid schedule **Bid Item 27 "Minor Concrete (Curb and Gutter, Type A)"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in placing PCC curb, complete in place including sawcutting, demolition, removal and off-haul or curb, gutter and asphalt concrete; excavation, subgrade preparation, backfill, aggregate base, compaction, dowelling, concrete curb and gutters, 6" wide drainage gaps, score marks, weakened plane joints, expansion joints, furnishing and applying curing compound; reconstructing and installing new curb drains and sidewalk underdrains; HMA conforms, site restoration, and clean-up, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer and no additional compensation will be allowed.

The contract price paid per lineal foot identified in the bid schedule **Bid Item 28 "Minor Concrete (Vertical Curb – Median Island)"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in placing PCC curb, complete in place, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer and no additional compensation will be allowed.

The contract price paid per square foot identified in the bid schedule **Bid Item 29 "Minor**

Concrete (Sidewalk)" shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in placing PCC sidewalk, including excavation, subgrade preparation, backfill, aggregate base, compaction, dowelling, concrete, curb ramp forming and flatwork, score marks, weakened plane joints, expansion joints, furnishing and applying curing compound; pruning, removing and disposing of roots, disposing of and furnishing utility boxes, reconstructing curb and under-sidewalk drains, site restoration, irrigation repairs, clean-up and other incidental work, as shown on the plans, as specified in the Standard Specifications these Specifications, and as directed by the Engineer and no additional compensation will be allowed.

The contract price paid per square foot identified in the bid schedule **Bid Item 30 "Minor Concrete (Median Island)"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in placing PCC median island, including excavation, subgrade preparation, backfill, aggregate base, compaction, clean-up and other incidental work, as shown on the plans, as specified in the Standard Specifications these Specifications, and as directed by the Engineer and no additional compensation will be allowed.

The contract price paid per each identified in the bid schedule **Bid Item 31 "Minor Concrete (Curb Ramp)"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in placing PCC curb ramp, including excavation, subgrade preparation, backfill, aggregate base, compaction, dowelling, concrete, curb ramp forming and flatwork, score marks, weakened plane joints, expansion joints, furnishing and applying curing compound; pruning, removing and disposing of roots, disposing of and furnishing utility boxes, reconstructing curb and under-sidewalk drains, site restoration, irrigation repairs, clean-up and other incidental work, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer and no additional compensation will be allowed.

Full compensation for aggregate base involved with **SECTION NO.24 – MINOR CONCRETE** shall be considered as included in the contract prices paid for within these bid items and no additional compensation will be allowed therefor.

END OF SECTION

SECTION NO. 25 – DETECTABLE WARNING SURFACE (TRUNCATED DOMES)

25.01 GENERAL

This work includes furnishing and installing truncated domes into new curb ramps.

25.02 MATERIALS

A prefabricated, cast in place, detectable warning surface tile consisting of raised truncated domes having an inline pattern shall be installed on all PCC curb ramp surfaces. The color of the detectable warning surface shall be yellow conforming to Federal Standard 595B, Color No. 33538.

The prefabricated detectable warning surface tiles shall be in conformance with the requirements established by the Department of General Services, Division of State Architect and be that the surface shall be set in place in conformance with the manufacturer's recommendations. The cast

in place tiles shall be an epoxy polymer composition with an ultraviolet stabilized coating employing aluminum oxide particles in the truncated domes.

The detectable warning surface shall be Armor Tile as manufactured by Engineered Plastics Inc, Access Tile, ADA Signs Depot or an approved equivalent. The manufacturer must provide a written five (5) year warranty guaranteeing replacement when there is defect in the dome shape, color fastness, sound on cane acoustic quality, resilience, or attachment. The warranty period will begin upon acceptance of the contract.

25.03 SUBMITTALS

Submittals shall include technical and product data, performance reports, certificates of compliance and installation instructions for proposed materials and products as requested by the Engineer.

25.04 CONSTRUCTION

The Contractor's attention is directed to the section titled "Curb Ramps" of these Special Provisions.

25.05 MEASUREMENT AND PAYMENT

The contract price paid per each identified in the bid schedule **Bid Item 32 "Detectable Warning System (Truncated Domes)"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in placing detectable warning surfaces, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer and no additional compensation will be allowed. Each detectable Warning System (Truncated Domes) shall be defined as the location area covering it.

END OF SECTION

SECTION NO. 26 – STREET LIGHTING SYSTEM

26.01 GENERAL

Electrical shall conform to the provisions in Section 86, "Electrical Systems," of the Standard Specifications, Standard Plans with the following amendments, the National Electrical Code, Comply with part 4 of the *California MUTCD*, City Standards 600 Series for Street Lighting, these Special Provisions, and as directed by the Engineer.

Work shall include the installation of installation of Type 15 and Type 15D lighting standards and foundations.

26.02 MATERIALS

Street Light Poles

Streetlight poles shall be Type 15 and 15D consistent with State Standard Plan ES-6A and Section 56, 86, and 87 of the State Standard Specifications. Luminaire mast sarm shall be 12' long. Construct the pole foundation consistent with State Standard Plan ES-7N.

Pole identification numbers shall be located on the street side, minimum 4x2 inch reflective white on black with adhesive backs.

Luminaire

The luminaire shall be an LED fixture with a top-mounted photocell, manufacturer and brightness to be specified by the City.

Conduit and Conductors

Conduit shall be 2-inch diameter Schedule 80 PVC. All bends shall be factory made. Conduits shall be sealed with an approved duct seal.

All wiring shall be type XHHW insulated stranded copper cable. Unless otherwise required by code all wiring shall be of the following sizes:

1. Street light wiring: No. 8.

Pull Boxes

Pull boxes and covers in the sidewalk or behind the curb shall be composite, Christy “Fiberlite”, Armorcast polymer concrete or Engineer Approved equivalent. No. 5 pull boxes shall be installed adjacent to each pole as indicated in the plans on 12-inches of clean drain rock. Pull box covers shall be secured with brass hold down bolts and inscribed “SAUSALITO STREET LIGHTING”.

26.03 SUBMITTALS

Contractor shall provide the Engineer with submittals for the pole, luminaire, and street light system.

26.04 EXECUTION

Notify the City of Sausalito at (415) 289-4106 or **engineering@sausalito.gov** at least 5 business days before starting work for a field marking of all City electrical facilities.

Contractor shall field verify with the City’s representative the proposed locations of all poles, pull boxes, push buttons, signs and beacons prior to final installation.

Contractor shall test the complete installation in the presence of City's Representative upon completion of the project, including tests for light distribution, controls, unintentional grounds, proper grounding, and bonding, circuit continuity.

City Street Light

Install Type 15 street light poles, foundations, pull boxes, and conduit in accordance with the Caltrans Standard Plans ES-6A, 6D, and 7N.

Coordinate with the City’s representative to turn off power to the street light circuit prior to working on the street light system.

Locate the underground street light service conduit. Install a pull box in the existing service conduit run. Remove existing service conductors to the next adjacent pull box, replace with

new conductors with a minimum of 5-feet of slack within the new and adjacent pull box. Resplice the service conductors.

Conduit

Conduit installation shall conform with Section 87-1.03B of the State Specifications. Excavating and backfilling for electrical systems shall conform with Section 87-1.3E of the State Specifications.

If existing underground conduit is to be incorporated into a new system, clean it with a mandrel or cylindrical wire brush and blow it clean with compressed air.

Conduit shall extend 1.5 inches above the bottom of pull boxes.

After conductors have been installed, the ends of conduits terminating in pull boxes and service and controller cabinets shall be sealed with an approved type of sealing compound.

Pull Boxes

Pull box installation shall conform with Section 87-1.03C(1) of the State Specifications. Replace paragraph 3 of Section 87-1.03C(1) with:

Install a pull box on a bed of crushed rock.

Pull boxes shall not be located within sidewalk access ramp areas.

Where new conduit is to be installed into an existing pull box, the Contractor shall remove and dispose of the existing pull box and shall furnish a new pull box of equal or greater size.

Whenever a part of a square or slab of existing sidewalk, curb and gutter, or driveway is broken or damaged, the entire square, section or slab shall be removed and the concrete reconstructed. Payment for backfilling, compaction and sidewalk repair shall be included in the unit cost breakdown for removal of each item.

Conductors and Wiring

Installation for conductors and wiring shall conform to Section 87-1.03F of the State Specifications.

Splices shall be insulated by "Method B" or by heat shrink tubing conforming to the requirements of Section 87-1.03H(2) “Splice Insulation," of the State Specifications.

Foundations

Reinforced cast-in-drilled-hole concrete pile foundations for traffic signal and lighting standards shall conform to the provisions in Section 49 “Piling,”, Section 56-3 “Standards, Poles, Pedestals, and Posts”, and Section 87-1.03E(3) of the State Specifications.

Material resulting from drilling holes shall be disposed of in conformance with the provisions in Section 87-1.03E, “Excavating and Backfilling,” of the State Specifications.

26.05 MEASUREMENT AND PAYMENT

The contract price paid per each identified in the bid schedule **Bid Item 33 "Install Luminaire on New Foundation"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in installing new foundations, poles, luminaires, No. 5 pull boxes, conduit, and conductors complete in place and any other work required to install the lighting systems as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 27 – RECTANGULAR RAPID FLASHING BEACON

27.01 GENERAL

This work shall consist of providing and installing complete and in place Rectangular Rapid Flashing Beacon (RRFB) Assemblies, bollards and push buttons for RRFB activation, including pole foundations, mounting hardware, and all incidentals needed thereto.

Payment for W11-15 and W11-7P signs shall be included in Bid Item Roadside Signs.

RRFB assembly installation shall be as shown on the plans and in accordance with the most current edition of the California MUTCD, these Technical Specifications, and the manufacturer's specifications.

27.02 SUBMITTAL

Submit a schedule of values within 15 working days after Contract approval. Do not include costs for the traffic control system in the schedule of values.

Submit the manufacturer's replacement warranty documentation.

Submit a certificate of compliance and the manufacturer's QC test data for the light bar, solar panel system, battery system, radio system and APS as an informational submittal.

Submit detailed solar simulations as evidence that the RRFB is capable of the claimed performance at a specific location. Solar Simulations shall be composed of three calculations: Energy Balance, Array-to-Load Ratio (ALR), and Autonomy. The manufacturer or bidder shall provide a detailed analysis of these three calculations in an "Energy Balance Report".

Submit a schedule of values within 15 working days after Contract approval. Do not include costs for the traffic control system in the schedule of values.

Submit the manufacturer's replacement warranty documentation.

Submit a certificate of compliance and the manufacturer's QC test data for the light bar, solar panel system, battery system, radio system and APS as an informational submittal.

Submit detailed solar simulations as evidence that the RRFB is capable of the claimed performance at a specific location. Solar Simulations shall be composed of three calculations:

Energy Balance, Array-to-Load Ratio (ALR), and Autonomy. The manufacturer or bidder shall provide a detailed analysis of these three calculations in an “Energy Balance Report”.

27.03 MATERIALS

Rectangular Rapid Flash Beacon System.

RRFB system shall be produced and/or manufactured by TAPCO or approved equivalent.

Manufacturer shall provide a 5-Year Limited Warranty for the RRFB systems, with the exception of the batteries which shall be covered by a 1-year warranty.

The Rectangular Rapid Flashing Beacon System shall include the following components:

1. Network controller (1 per intersection/crossing) per manufacturer’s recommendation
2. Rectangular Rapid Flashing Beacon (RRFB) unit (single or double-sided as shown on the plans)
3. W11-15 and W16-7p signs (included in pay item 10.18)
4. Spread spectrum wireless radio (1 per pole that requires power for RRFB unit(s)) 5.
5. Accessible Pedestrian Signals (APS)
6. Battery-powered wireless bollard station
7. Pedestrian thermal detection sensor
8. Galvanized bollard or pole, as indicated on plans, with steel cap for push button installation (1 per location shown on the plans) with aluminum pedestal base, unless otherwise stated on plans. See plans for pole/bollard dimensions.
9. Galvanized pole with mounting hardware for RRFB installation (1 per location shown on the plans) with aluminum pedestal base, unless otherwise stated on plans. See plans for pole dimensions.

System shall be fully compliant with applicable FHWA and CA MUTCD guidelines. System may include remote management capability and be online accessible. System shall not require the installation or alteration of any other equipment or associated hardware, such as traffic signal controllers, Ethernet connections, local radios, local wireless connections or local networks.

The RRFB housing shall contain two primary light bars mounted in compliance with MUTCD requirements but exceeding the minimum 5" W x 2" H size and CA MUTCD total light emission requirements. The overall dimensions of the RRFB unit shall be 29"Wx 4"Hx 1.5"D. In addition to the primary light bars, the housing shall have smaller secondary light bars mounted on each end for pedestrian notification, arrayed in a 0.4" W x 2 H rectangle. The LEDs used in both the primary and secondary light bars shall be rated for a minimum 15-year life, and the light bars shall not protrude beyond the surface of the housing, shall not be mounted to the housing with exposed screws, and shall be covered with polycarbonate windows for durability and vandal resistance. The RRFB shall draw attention at distances greater than 1000 feet during the day and over 1 mile at night.

The controller shall adjust RRFB brightness as outside light levels change between day and night, being brighter during the day and less bright at night.

The controller unit shall be solar powered. The controller shall be housed in a vandal resistant NEMA 3R pole- mounted cabinet with a lockable, hinged door.

Both the battery-powered wireless bollard station and the pedestrian thermal detection sensor shall be manufactured by the same company as the RRFB system.

Accessible Pedestrian Signals

The Accessible Pedestrian Signals that shall have an LED indicated with audible tone with Piezo control and shall be ADA compliant. APS shall be wired to the nearest RRFB system.

Type 1-A Poles, and Foundations

New 1-A Poles and foundations shall conform to State Standard Plan ES-7B, Type 1-A Standard Detail A-1, except the pole length for RRFB assemblies shall be per the height indicated on the plans.

Conduit and Conductors

Conduits shall be Schedule 80 PVC. Conductors shall be copper.

- Pole: New poles as indicated in the plans shall be 4” round Type 1-B measuring minimum 16 feet from the finished grade. Pole foundation shall be per Caltrans Revised Standard Plans ES-7M.

27.04 EXECUTION

Contractor shall field verify with the City’s Representative the proposed locations of all poles, pull boxes, push buttons, signs and beacons prior to final installation.

Contractor shall test the complete installation in the presence of City's Representative upon completion of the project, including tests for light distribution, controls, unintentional grounds, proper grounding, and bonding, circuit continuity.

27.05 MEASUREMENT AND PAYMENT

The contract price paid per each identified in the bid schedule **Bid Item 34 “Install Rectangular Rapid Flashing Beacon (Single-Sided)”** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in installing single sided rectangular rapid flashing beacons in place and any other work required to install the rectangular rapid flashing beacons as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer and no additional compensation will be allowed.

The contract price paid per each identified in the bid schedule **Bid Item 35 “Install Rectangular Rapid Flashing Beacon (Double-Sided)”** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in installing double sided rectangular rapid flashing beacons in place and any other work required to install the rectangular rapid flashing beacons as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 28 – PAVEMENT STRIPING AND PAVEMENT MARKINGS

28.01 GENERAL

Specifications for providing traffic striping, control markings and traffic channelizer posts on pavement as indicated. All work shall conform to the Section 84 “Markings” of the Standard Specifications.

28.02 SUBMITTALS

Contractor shall submit shop drawings and diagrams, indicating stripe width of roadway divider stripes, style, and size of letters for pavement marking designation, configuration and dimensions of arrows and any other traffic control markings on pavement.

Contractor shall submit evidence or affidavit which certifies that paint to be used complies with latest CARB/VOC regulations.

A certificate of compliance shall be provided by the Contractor to the City that all materials used for pavement marking and legends conform to the Standard Specifications.

28.03 MATERIALS

Traffic stripes and pavement markings shall be installed per Section 84 of the Standard Specifications and these Specifications.

All striping and pavement markings shall be Thermoplastic and conform to either State Specifications PTH-02HYDRO OR PTH-02ALKYD. Sprayable thermoplastic must comply with State Specification PTH-02SPRAWY.

Green Thermoplastic Markings shall be preformed panels manufactured by Ennis-Flint (PreMark Bike Lane Green) or approved equal.

Type 2 glass beads must comply with AASHTO M247.

Curb paint materials shall comply with Section 84-2.02G of the Standard Specifications.

28.04 EXECUTION

All traffic striping, pavement markings (legend), and pavement markers removed prior to excavation or grinding shall be replaced except as modified in the Plans or as directed by the City Engineer. Prior to replacement, the Contractor shall layout all striping patterns and marking locations by cat tracking or other suitable means for review and approval by the City Engineer. Any striping and/or markings installed by the Contractor that the City Engineer has not pre-approved, and that the City Engineer determines are installed improperly or in the wrong location, shall be removed and replaced to the satisfaction of the City Engineer at the Contractor’s sole expense.

Surfaces which are to receive markings shall be thoroughly cleaned, free from loose materials and dry. Such areas shall be prepared by the Contractor to the satisfaction of the City Engineer.

Any damage to existing or newly placed traffic striping due to the failure of the Contractor to protect the work, and correction of errors, shall be repaired by the Contractor at no additional cost.

All new traffic stripes and pavement markings shall meet the following requirements for applications with enhanced wet night visibility:

The finished surface shall be cat-tracked within 24 hours of completion of paving work. Final striping shall be applied within one week of completion of paving work.

Nothing in these Specifications shall relieve the Contractor from their responsibilities as provided in Section 7-1.09, “Public Safety,” of the Standard Specifications.

Paint for curbs shall comply with Section 84-2.04B(6) “Paint” of the Standard Specifications.

Construction

Construct recesses to 3/8-inch depth in a single pass. Allow wet ground recesses to dry a minimum of 24 hours and keep recesses free from debris.

Apply primer or surface preparation adhesive at a minimum rate of 1 gallon per 300 square feet.

Use a ribbon extrusion or screed type applicator to apply a thermoplastic traffic stripe.

Apply an extruded thermoplastic traffic stripe at a rate of at least 0.36 pounds per foot of 6-inch-wide solid stripe. The applied thermoplastic traffic stripe must be at least 0.060 inch thick.

Apply an extruded thermoplastic pavement marking at between 0.100 to 0.150-inch thick.

Apply Type 2 glass beads to the surface of the molten thermoplastic at a rate of at least 8 pounds per 100 square feet of stripe or marking.

Application of curb paint shall consist of two separate coats of traffic paint of the appropriate color to the face and top of the curb. Use mechanical wire brushing to remove dirt, contaminants, and loose material from the surface that is to receive curb paint.

Use abrasive blast cleaning to remove laitance and curing compound from the surface of new concrete that is to receive curb paint.

Quality Control and Assurance

Within 14 days of applying a thermoplastic traffic stripe or pavement marking with enhanced wet night visibility, the retroreflectivity must be a minimum of 250 millicandelas per square meter per lux for white stripes and markings and 125 millicandelas per square meter per lux for yellow stripes and markings. Test the retroreflectivity under ASTM E 1710. Have a reflectometer as described in ASTM E 1710 at the job site for making these measurements.

28.05 MEASUREMENT AND PAYMENT

The contract price paid per square foot for **Bid Item 36 “Pavement Marking - Thermoplastic White”** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the surface and installation of pavement markings as shown in the plans, as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer. The payment quantity for a pavement marking is the area covering it.

The contract price paid per square foot for **Bid Item 37 "Pavement Marking - Thermoplastic Green"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the surface and installation of green thermoplastic bike markings as shown in the plans, as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer. The payment quantity for a pavement marking is the area covering it.

The contract price paid per square foot for **Bid Item 38 "Pavement Marking – ADA Markings"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the surface and installation of ADA markings as shown in the plans, as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer. The payment quantity for a pavement marking is the area covering it.

The contract price paid per lineal foot for **Bid Item 39 "Pavement Striping – Thermoplastic White"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the surface and installation of thermoplastic striping as shown in the plans, as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer. The payment quantity for a traffic stripe is the length measured along the line of the traffic stripe without deductions for gaps in the broken traffic stripe.

The contract price paid per lineal foot for **Bid Item 40 "Install Pavement Striping – Thermoplastic Yellow"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the surface and installation of thermoplastic striping as shown in the plans, as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer. The payment quantity for a traffic stripe is the length measured along the line of the traffic stripe without deductions for gaps in the broken traffic stripe. A double sprayable thermoplastic traffic stripe consisting of two 6-inch-wide or 8-inch-wide stripes are measured as a single traffic stripe.

The contract price paid per lineal foot for **Bid Item 41 "Pavement Striping – Thermoplastic Blue"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the surface and installation of thermoplastic striping as shown in the plans, as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer.

The contract price paid per lineal foot for **Bid Item 42 "Red Curb Paint"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the surface and installation of curb paint as shown in the plans, as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer.

The contract price paid per lineal foot for **Bid Item 43 "Gray Curb Paint"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the surface and installation curb paint as shown in the plans, as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer.

The contract price paid per lineal foot for **Bid Item 44 "Green Curb Paint"** shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in preparing the surface and installation of curb paint as shown in

the plans, as specified in the Standard Specifications and these Specifications, and as directed by the City Engineer.

END OF SECTION

SECTION NO. 29 – ROADSIDE SIGNS AND POSTS

29.01 GENERAL

Roadside signs shall be furnished and installed on new foundations at the locations shown on the plans or where designated by the City Engineer and in conformance with the provisions in the Standard Plans and Specifications and these special provisions.

29.02 SUBMITTAL

Contractor shall provide submittal for each Respective manufacturer's product data for manufactured products.

29.03 MATERIALS

Signs

All signs and plaques shall conform to CA-MUTCD standards. All signs and plaques shall be Federally specified .080 gauge, 5052 aluminum. Unless specified otherwise, sign shall be 3M™ DG3 diamond grade cubed or equivalent prismatic sheeting, with anti-graffiti overlay. All sign assemblies shall use provided anti-vandal fasteners and tools to mount components to sign and sign to fixture.

Sign Posts

Roadside sign posts shall be one of the following or approved equal:

Western Highway Products:

10680 Fern Ave.

Stanton, CA 90680

(800)479-3793

Model: Ulti-Mate Sign Support System

Zumar Industries, Inc.:

9719 Santa Fe Springs Road

Santa Fe Springs, CA 90670

(800)654-7446 www.zumar.com

Model: Perforated Square Steel Sign Posts

Tapco:

5100 W. Brown Deer Road

Brown Deer, WI 53223

(800)236-0112 www.tapco.com

Model: Galvanized Square Post

Posts for roadside signs shall conform to Standard Plan RS1. Posts shall have a bolt installed at the base of the post, as recommended by the manufacturer, and as directed by the City Engineer. Posts shall be 12-gage galvanized steel 2.25-inch square tube with perforations, weighing 2.09 pounds per linear foot.

29.04 EXECUTION

Existing roadside signs shall not be removed until replacement signs have been installed or until the existing signs are no longer required for the direction of public traffic, unless otherwise directed by the City Engineer.

Signs and mounting shall be installed at the locations shown on the plans, or where directed by the City Engineer and shall conform to the provisions in Section 56-4, “Roadside Signs,” of the Standard Specifications and these Special Provisions. Existing and new signs to be mounted to existing or new posts shall be done in accordance with applicable Caltrans standards.

29.05 MEASUREMENT AND PAYMENT

The contract price paid per each identified in the bid schedule **Bid Item 45 “Install New Sign”** shall include full compensation for furnishing the sign, all labor, materials, tools, equipment, incidentals for doing all the work involved in installing sign posts and foundation as shown in the plans.

The contract price paid per each identified in the bid schedule **Bid Item 46 “Install New 4” Post and Foundation”** shall include full compensation for furnishing the sign and sign post, all labor, materials, tools, equipment, incidentals for doing all the work involved in installing sign posts and foundation as shown in the plans.

The contract price paid per each identified in the bid schedule **Bid Item 47 “Install New 2” Post and Foundation”** shall include full compensation for furnishing the sign and sign post, all labor, materials, tools, equipment, incidentals for doing all the work involved in installing sign posts and foundation as shown in the plans.

END OF SECTION

SECTION NO. 30 – PARKING METERS, POST AND FOUNDATION

30.01 GENERAL

Parking meter post and foundation shall be furnished and installed on new foundations at the locations shown on the plans or where designated by the City Engineer and in conformance with the provisions in the Standard Plans and Specifications and these special provisions.

30.02 SUBMITTALS

Contractor shall submit manufacturer's product data and installation recommendations by manufacturer for any manufactured products for favorable review by the Engineer.

30.03 EXECUTION

Parking meter post and foundation shall be installed at the locations shown on the plans and as directed by the Engineer. Contractor will install the parking meter post and foundation per the manufacturer's specifications and instructions and per the direction of the Engineer and shall furnish all materials needed to reinstall and will dispose of all excess materials. Pay station to be reinstalled on flat, uncracked concrete. Units shall be installed stable, plumb, and square in true alignment. Verify specific furnishing orientations prior to installation.

30.04 MEASUREMENT AND PAYMENT

The contract price paid per each identified in the bid schedule **Bid Item 48 "Install Meter Post and Foundation"** shall include full compensation for furnishing meter post and foundation, all labor, materials, tools, equipment, incidentals for doing all the work involved in installing meter post and foundation as shown in the plans.

END OF SECTION

SECTION NO. 31 – LANDSCAPE PLANTING

31.01 GENERAL

Planting shall conform to the provisions in Section 20 of the Standard Specifications.
Work consists of tree protection, soil analysis, recommendations and preparation, planting trees and shrubs, and installing mulch.

31.02 SUBMITTAL

Contractor shall provide submittal for each Respective manufacturer's product data for manufactured products.

31.03 MATERIALS

Plant Quality and Size: Plants shall be vigorous and of normal habit of growth and shall be free of girdling roots, disease, insects, insect eggs and larvae. Trees shall have straight trunks with the leader intact, unless otherwise specified. All abrasions and cuts shall be completely callused over. Plants shall be of standard size for container and species, unless specified otherwise in the container and species, unless specified otherwise in the Drawings. Any undersized material shall be rejected. The heights of plants and of branching shall be measured where the branches are in normal positions. Plants shall not be pruned prior to delivery, except upon special approval.

Nomenclature: Plant names used in the drawings and Specifications conform to Standardized Plant Names, by the Joint Committee on Horticultural Nomenclature. Names of varieties not included therein conform generally to names accepted in the Nursery trade.

Plant labels: Plant labels shall identify a typical sample of each species and variety.

Substitutions: Substitutions are not desired. When substitutions are allowed, all requirements of the specified plant shall be met, and in no case shall substitutions be made without the written approval of the City Engineer.

Annuals, cuttings, and balled or bare root stock plants shall have been grown in a nursery under climatic conditions similar to those in the locality of the project for at least one (1) year prior to delivery to the site. Boxed trees shall be well established in boxes before delivery to the site. Balled stock shall be freshly dug. The ball or balled stock shall have the original soil in which it was grown, without addition, the balls shall be whole and intact, and not broken on arrival at the site. Burlap used shall be of sufficient size to enclose the complete dirt ball and shall be tied securely with stout twine. Balled stock or bare root stock may be furnished where canned containers are specified, only with approval by the Landscape Architect.

Bark Mulch: All planting areas to receive 3" layer of bark mulch. Mulch to be 'Gold Nuggets by Sungrow Landscape Products'. Submit sample prior to placement for approval.

31.04 EXECUTION

Plant locations shown in the Plans are relative and the Contractor may adjust the location of plants in order to achieve the intended results. The Contractor shall locate the center point of shrubs no closer than 30 inches (2.5') to pavements or curbs. The plant locations shown on the plans are intended to create a 18" maintenance access zone between mature plants and the curb.

Plant holes shall be dimensioned as shown in the drawings, or at least twice the width of the rootball. Plant holes shall be roughly cylindrical. The walls and bottoms of plant holes shall be scarified.

Proper drainage of plant pits is necessary. The Contractor shall inform the City Engineer if any subsoil conditions cause the detention of water in plant holes for than twenty-four (24) hours, and shall submit proposals for correcting such drainage conditions before proceeding with planting. Planting under such conditions may not proceed without the approval of the City Engineer.

If plants do not have young feeder roots showing at the edge of the container, loosen their roots and cut in a few places to encourage new feeder root development along the perimeter of the rootball.

Soil excavated from plant holes, if suitable as topsoil and approved by the City Engineer or their authorized representative, may be re-used for planting operations. If unsuitable soil is encountered in excavation, such soil shall be removed from the site and a sufficient amount of approved topsoil as recommended by a soil analysis of suitable soil amendment or planting soil for installing plant material shall be provided.

Trees shall be set true and plumb with the top of the plant ball, as grown in the nursery can container. The top of the plant ball shall be set at the finish grade of the planting area. The Contractor shall be responsible for any settling and shall raise and replant any plants whose crown settles below the finish grade.

Place backfill in bottom of plant hole after making sure base of hole is loose enough for good drainage. After placing plant ball as detailed, firm backfill around ball of roots of plant and water thoroughly.

Except where a plant is in a lawn area or where a single plant space is otherwise edged, form a berm or ridge of soil in a neat circle at the drip-line of each existing tree and new shrub, to facilitate watering and hold top mulch.

After planting, fine grade all planting areas.

Immediately following plant installation, hand water thoroughly.

Install root barrier.

31.05 MEASUREMENT AND PAYMENT

The contract per square foot price paid for **Bid Item 49 "Top Soil and Mulch"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in soil preparation complete in place, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 32 – SOIL PREPARATION

32.01 GENERAL

Refer to Section 20-1.03(C) "Roadside Clearing" and Section 20-3 "Planting" of the State Revised Standard Specifications for clearing planting areas, preparing planting areas, and planting plants.
Work consists of soil preparation for groundcover. Where a landscaped area is to be planted, contractor shall amend soil and add top soil to reach the finished grade. For all other dirt areas shown in the plans, the contractor shall import top soil to fill to finished grade in preparation for mulch groundcover.

32.02 SUBMITTAL

Submit to the Engineer at least fourteen (14) calendar days prior to installation samples of materials for approval. For standard products, also submit the manufacturer's certified analysis. For other materials, submit an analysis by a recognized laboratory made in accordance with the current methods established by the Association of Official Agricultural Chemists.
Submit to the City Engineer written certification stating quantity, type, composition, weight and origin of all amendments and chemicals delivered to the site for soil preparation work.

32.03 MATERIALS

Composted soil amendments: No amendment shall be delivered to the site without prior approval by the Engineer. Supply Engineer with a sample of amendment accompanied by analytical data from an approved laboratory illustrating degree of compliance.

Composted soil amendments shall meet the following requirements, available at American Soil Products, (WonderGrow Organic Compost), SMaRT Soil Products, San Leandro, 510-638-2303, (Garden Gold Compost): or equal

- Particle size Distribution: 13mm minus.

- Feedstock: Make from recycled yard trimmings and pre-consumer vegetable and fruit trimmings from a regional produce market.
- Organic Matter: 50%-57%
- Carbon to Nitrogen Ratio: 23:1-32:1
- pH: 7.2-8.2
- Nutrient Ranges per Cubic Yard:

  N= 2.9 - 4.8 kg

  P= 0.3 - 0.6 kg

  K= 1.75 - 2.35 kg

  Ca= 4.75 - 6.5 kg

Imported Planting Soil shall be *General Landscape Soil* blend –by American Soil & Stone Products, 2121 San Joaquin Street, Building A, Richmond California, phone 510-292-3000, or approved equal, containing the following characteristics (by volume), or approved equal:

- 60% Sandy Loam
- 20% WonderGrow Organic Compost (OMRI Listed)
- 10% Aged Wood Fines
- 10% Grape Compost
- pH – 7.3
- Lime – None
- Salinity (ECe) – 3.1 dS/m
- Percolation Rate – 4 inches per hour

Commercial Fertilizer: Commercial fertilizer shall be commercially processed fertilizer and shall conform to applicable requirements of agricultural laws and regulations of the State of California.

Post-Planting Fertilizer: Complete fertilizer, fifty percent of the nitrogen to be derived from natural organic sources or urea-form. Available phosphoric acid shall be from superphosphate, bone or tankage. Potash shall be derived from muriate of potash containing 60 percent potash:

- 16% Nitrogen
- 6% Phosphoric Acid
- 8% Potash

Quantities of Amendment and Fertilizer:

Roto-till thoroughly the following into the top 6” of all planting areas:

Amount per 1000sf	
5.0 cubic yards	Composted Soil Amendment
20 pounds	6-20-20 fertilizer (Best' Cropmaker)

Thoroughly mix the following and use as backfill for all trees, shrubs and vines:

Amount per cubic yard	
3/4 cubic yard	On site soil from hole
1/4 cubic yard	Composted Soil Amendment
3 pounds	6-20-20 fertilizer (Best's Cropmaker)

32.04 EXECUTION

1. Soil Moisture Content: Do not work soil when moisture content is so great that excessive compaction will occur, or when the soil is so dry that clods will not break readily or dust will form in the air. Apply water as required to prevent the formation of an airborne dust nuisance and to provide ideal soil moisture content for tilling.

2. Subgrade Scarification: All landscape areas shown in the plans shall be scarified to a minimum depth of 8 inches (200 mm) and tilled to break down clods. Any rocks over 1 inch (25 mm) in any dimension, gravel, and miscellaneous debris shall be removed. Any areas which, subsequent to initial scarification become recompacted as a result of having been subjected to vehicular traffic shall be re-ripped.

3. Topsoil Layer: All landscape areas shall finish with site soil placed to eighty percent (80%) maximum relative compaction, as determined by Test Method No. California 216. Minimum depth of topsoil layer shall be 4 inches (150 mm) unless indicated otherwise in the Drawings.

4. Incorporate commercial fertilizer and soil amendments as specified, cultivate top 6 inches (150 mm) of soil in all areas, and remove all sticks, stones over 1 inch (25 mm) in any dimension, roots, weeds and other foreign material.

Soil Amendment

1. Provide soil analysis from an approved testing laboratory. Soil analysis using Saturate Media Analysis will not be allowed and rejected outright for soil analysis. Soil analysis must include pH, salinity, sodium hazard, boron hazard, lime content, organic matter, soil texture and available nutrient levels. Submit test results, analysis, and recommendations for:

2. Top Soil Analysis: After approval of rough grading and topsoil placement, obtain representative samples of topsoil taken from approved site locations and submit to approved testing agency for “agricultural suitability” analysis report, including evaluation of physical and chemical properties of soil and recommendations for adding amendment and fertilizers to the soil. Upon approval of the Laboratory’s report by the Engineer, the report recommendations become a part of the Specifications. Provide the

quantities of soil amendment, fertilizer and other additives in accordance with the report.

3. Imported Top Soil Analysis: Submit sample to approved testing laboratory for “agricultural suitability” analysis report, including evaluation of physical and chemical properties of soil and recommendations for adding amendment and fertilizers to the soil. Upon approval of the laboratory’s report by the Engineer, the soil and report recommendations become a part of the Specifications. Provide the quantities of soil amendment, fertilizer and other additives in accordance with the report.

4. Imported Soil Fill shall fall within acceptable tolerances for plant fertility and suitability and shall have a pH value between 6 and 7.5. Imported soil fill that exceed acceptable levels for Macro and Micro – Nutrients for plants as indicated in soil laboratory testing will be rejected and shall not be used for project.

5. The following organic amendments, soil amendments, and fertilizer rates and quantities are to be used for bid basis only.

Provide topsoil as required to complete landscape work. Topsoil to be furnished shall be fertile and friable, possessing characteristics of representative productive soils on the site. It shall not contain toxic substances which may be harmful to plant growth. If herbicide contamination is suspected then a radish/rye grass growth trial must be performed. Consult with Engineer prior to decision to test. It shall be uniformly textured and free of all objectionable foreign materials, oil, or chemicals which may be injurious to plant growth. Natural topsoil shall possess a pH factor between 5.5 and 7.5, a sodium adsorption ratio (SAR) of less than 8, a boron concentration of the saturation extract of less than 1 ppm, and salinity of the saturation extract at 25C degrees of less than 4.0 millimhos per centimeter. Obtain topsoil from naturally well-drained sites where topsoil occurs in a depth of not less than 4 inches; do not obtain from bogs or marshes. Topsoil from the project stockpile which meets the requirements is acceptable.

Planting Soil (Topsoil) is defined as on-site surface soil. Satisfactory planting soil shall be free of subsoil, heavy or stiff clay, lumps, stones, and other objects over 4 inches in diameter, and without weeds, roots, and other objectionable material.

Imported Topsoil shall be tested by an approved soils laboratory for compatibility with existing on-site soils and fertility. Submit soil laboratory’s analysis and amendment recommendations. Imported topsoil shall be subject to inspection by the Engineer at the project site. Remove rejected topsoil immediately at your expense. The imported topsoil shall be blended on site with the following ratio:

- 1 part of compost blended with 2 parts of imported soil.
- Imported planting soil pH value to be between 6.0 and 7.5 with boron concentration of the saturation extract of less than 1 ppm, salinity of the saturation extract at 25 degrees C. of less than 4.0 millimoles, and a sodium absorption rate (SAR) of less than 8.
- Silt and clay content of imported planting soil is not to exceed that of the existing soil it is to be placed over.

  - Do not deliver topsoil to the site until the Engineer has reviewed soils report and has approved submittals.
  - Import soil fill as needed to complete the job with the following properties:
  - Imported planting soil pH value to be between 6.0 and 7.5 with boron concentration of the saturation extract of less than 1 ppm, salinity of the saturation extract at 25 degrees C. of less than 4.0 millimoles, and a sodium absorption rate (SAR) of less than 8.
  - Silt and clay content of imported planting soil is not to exceed that of the existing soil it is to be placed over.

- Do not deliver topsoil to the site until the Engineer has reviewed soils report and has approved submittals.
- For bidding purposes, assume Soil Amender Compost, available from Organic Solutions, 1460 Goodyear Road, Benecia, California 94510, ph. (707) 751-0466 or approved equal. Application rate per 1000 square feet:

  6 cubic yards

Organic Compost

- Organic Amendment: Feedstock shall be no longer recognizable. Compost amendment shall contain fairly uniform particle size, no weed sprouts. Submit a nutrient analysis and testing data from a third party or soil lab, such as the STA Seal of Testing Assurance by the US Composting Council; or OMRI, Organic Materials Review Institute. Organic Compost shall meet the following criteria:
- Particle size: 100% passing a 1” screen or smaller.
- Salt Concentration: Must be reported; may vary but < 4.0 mmhos/cm preferred. Soil should be test. <2.5 mmhos/cm preferred for soil/compost blend.
- Feedstock Materials shall be specified and include at one or more of the following: landscape/yard trimmings, grass clippings, food scraps, and agricultural crop residues.
- Nutrient Content: provide analysis detailing nutrient content including N-P-K; Ca; Mg; S; and Bo. Nitrogen content 1% or above preferred.
- Trace Contaminants Metals (Lead, Mercury, etc.). Product must meet US EPA, 40 CFR 503 regulations.
- pH: pH shall be between 5.5 and 8.
- Visible Contaminants: compost shall be relatively free of inert ingredients, including glass, plastic and paper, < 0.1 % by weight or volume.
- Moisture Content shall be between 35% - 55% of dry solids.
- Organic Matter Content: 50% - 60% by dry wt. preferred, 30-70% acceptable.

- Carbon and Nitrogen Ratio: C:N < 20:1.
- Stability/Maturity: shall have a dark brown color and a soil-like odor. Compost exhibiting a sour or putrid smell, containing recognizable grass or leaves, or is hot (120F) upon delivery or rewetting is not acceptable.
- Weed seed/pathogen destruction: provide proof of process to further reduce pathogens (PFRP). For example, turned windrows must reach min. 55C for 15 days with at least 5 turnings during that period.
- Modify existing or construct new tree wells as detailed on the plans and conforming to these specifications.

32.05 MEASUREMENT AND PAYMENT

The contract lump sum price paid for **Bid Item 50 "Soil Preparation"** shall include full compensation for furnishing all labor, materials, tools, equipment, supervision, and incidentals and for doing all the work involved in soil preparation complete in place, as shown on the plans, as specified in the Standard Specifications and these Specifications, and as directed by the Engineer as may be required to complete the work and no additional compensation will be allowed.

END OF SECTION

SECTION NO. 33 – GROUND COVER

33.01 GENERAL

Attention is directed to the provisions in Section 20 of the Caltrans Revised Standard Specifications. Contractor shall spread mulch ground cover as indicated in the plans.

33.02 SUBMITTAL

Contractor shall submit for all proposed mulch materials.

33.03 EXECUTION

Mulching: Mulched areas shall be thoroughly watered. After watering, mulch shall be raked to provide a uniform finished surface.

33.04 MEASUREMENT AND PAYMENT

The lump sum price payment for **Bid Item 51 "Ground Cover"** shall include full compensation for furnishing all labor, materials, tools, equipment, storage, hauling, and incidentals for doing all the work involved as shown in the plans.

END OF SECTION

SECTION NO. 34 – ADJUST IRRIGATION (REVOCABLE ITEM)

34.01 GENERAL

All labor, planting, irrigation system, materials, supplies, tools and transportation to perform all operations in connection with construction complete in-place as indicated in the plans.

34.02 SUBMITTAL

Contractor shall provide submittal for each respective manufacturer's product data for manufactured products. For Irrigation, include sealants, cements, lubricants and other proprietary items. A complete material list shall be submitted prior to performing any work.

34.03 MATERIALS

IRRIGATION

Pipe and Fittings: Main lines (constant pressure) and lateral lines (non-pressure) shall be High Density Polyethylene (HDPE) pipe and shall comply with ASTM D3035-14a or ASTM F714-13. Pipe shall be IPS diameter, Standard Dimension Ratio (SDR) 11 and made from PE4710 compound meeting ASTM D3350 Code C with 2% to 3% carbon black. Butt fusion joints shall be made between parts of the same diameter and the same SDR. Metal Pipe shall be Schedule 40 galvanized steel conforming to ASTM 53B. Metal pipe shall be wrapped in 2-inch wide, 20 mil thick, black HDPE all weather corrosion-resistant tape with high tack adhesive. Use threaded galvanized steel fittings. Provide dielectric fittings where dissimilar metals come into contact. Connections between main lines and remote control valves shall be of HDPE (threaded both ends) nipples and fittings.

Fittings

- Molded butt fusion fittings shall comply with ASTM D3261-12ε. Fittings shall be IPS diameter, SDR 11. They shall be made from PE4710 compound meeting ASTM D3350 Code C with 2% to 3% carbon black.

- Molded socket fusion fittings shall comply with ASTM D2683-10ε. Fittings shall be IPS diameter and SDR 11 or better, and made from PE4710 compound meeting ASTM D3350 Code C with 2% to 3% carbon black.

- Threaded Transitions: PE x MNPT Stainless Steel transitions shall be SDR 11. The threaded end shall be 316 Stainless Steel. NPT threads shall comply with ANSI B1.20.1. The material shall be PE4710 compound meeting ASTM D3350 Code C with 2% to 3% carbon black.

- Gate Valves: 2½ inch and smaller shall be lead-free bronze construction conforming to ASTM B584 Alloy C87850 with screw-in bonnet, non-rising stem, operating wheel and threaded connections.

Ball Valves: Ball valves shall be Class 150 bronze full port design. Ball valves to be installed upstream of each remote control valve.

Remote Control Valves: Remote control valves shall be globe pattern constructed of heavy-duty glass-filled nylon and stainless steel with internal and external bleed. Operating pressure shall be 10 to 150 psi and flow range shall be .1-180 gpm. All internal parts shall be removable from the top. Each valve shall have a plastic tag denoting its controller and station number.

Controllers: Controllers shall be as listed on the Drawings and shall have the following features:

- Battery powered.
- Utilize soil moisture sensing.
- UL listed, solid state, capable of automatic or manual operation.
- Non-volatile memory.
- Scheduling with minimum 3 independent programs, and rain delay of 1-99 days

Control Wire: Copper with UL approval for direct burial in ground, size #12-1 for common wire and size #14 1 for control wire. Common ground wire shall have white insulating jacket; control wire shall have insulating jacket of color other than white. Provide a separate ground wire for each controller. Splices shall be made with 3M DBR/Y-6 connectors.

Valve Boxes: High density polyethylene construction with UV inhibitors. Lid shall be green in color and have stainless steel bolt-down mechanism. Boxes, lids, and bolts shall be from the same manufacturer. Plastic valve boxes shall be by Carson, NDS Pro Series, or equal. Valve box sizes are noted on drawing details. The lid shall be marked as follows:

- Remote Control Valves – “Irrigation Control Valve” or “ICV” with the station number in one inch (1”) high white enamel or heat branded numbers and letters.
- All other valves - “Irrigation Control Valve” or “ICV”.

Drip System: Provide all components required for complete system:

- Wye Filter: Corrosion resistant plastic housing, 1inch FIPT/MIPT connections with removable stainless steel screen and integral flush valve with hose threads. Screen shall be 155 mesh.
- Pressure regulator: Constructed of thermoplastic with stainless steel compression spring and securing screws. Pre-set to maintain constant outlet pressure of 40 psi.
- Drip tubing shall be extruded from low-density polyethylene. Tubing shall be UV protected. Fittings shall be by the same manufacturer as the tubing.

Subsurface Irrigation: Dripline tubing and pressure compensating emitters shall be extruded from linear low-density polyethylene. Tubing shall have a minimum nominal diameter of 17mm with a minimum wall thickness of 0.045. Tubing shall be pre-fitted with fleece wrap in two wings extending 16” on opposite sides of tubing.

All accessories listed below shall be furnished by the same manufacturer as the dripline.

- Line Flushing Valves – the subsurface irrigation system shall utilize manual flush valves at the end of each independent zone area. Manual valve shall be a ball valve connected to polyethylene tubing.

- Air/Vacuum Relief Valve – each independent irrigation zone shall utilize an air/vacuum relief valve at its high point. The air and vacuum relief valve shall seal effectively from 2 to 10 psi.

Soil Moisture Sensor: Soil moisture sensor shall be compatible with specified controller. Sensor shall be ceramic probe type, with 18 AWG wire leads for connection to controller. Sensor may be installed up to 1000' from controller.

Miscellaneous Installation Materials: Solvent cement and primer for solvent weld joints shall be of make and type approved by manufacturer(s) of pipe and fittings. Cement shall be maintained at proper consistency throughout use.Pipe joint compound shall be non hardening, non toxic materials designed specifically for use on threaded connections in water carrying pipe. Performance shall be same as Christy Ultra Seal Thread Sealant T10,000.

Drain rock: ¾-inch washed pea gravel.

Miscellaneous Equipment: Provide all equipment called for by the Drawings. Provide to the Owner, at completion of the Maintenance Period, three (3) each of all operating and servicing keys and wrenches required for complete maintenance and operation of all heads and valves. Include all wrenches necessary for complete disassembly of all heads and valves. Provide three (3) sets of keys to both controller cabinets.

PLANTING

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.

Planting soil mix: Sandy loam amended with compost. 'General Landscape Soil' as available from American Soil and Stone, 510.292.3000 or approved equivalent.

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.

34.04 REFERENCES

ASTM – American Society for Testing and Materials

A53 – Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

ICC – International Code Council

NEC – National Electric Code

State of California, Division of Industrial Safety

Electrical Safety Orders

UPC – Uniform Plumbing Code

34.05 QUALITY ASSURANCE

IRRIGATION

OSHA Compliance: All articles and services covered by this Specification shall meet or exceed the safety standards established under the Federal Occupational Safety and Health Act of 1970, together with all amendments in effect as of the date of this Specification.

The subcontractor shall erect and maintain barricades, guards, warning signs, and lights as necessary or required by OSHA regulations for the protection of the public or workmen.

Regulatory requirements: In addition to complying with all pertinent codes and regulations, comply with the latest rules of NEC and the Electrical Safety Orders of the State of California, Division of Industrial Safety, for all electrical work and materials. The materials and methods to be used in constructing the irrigation system shall conform to the applicable provisions of the UPC.

When the Specifications call for materials or construction of a better quality or larger size than required by the above-mentioned rules and regulations, the provision of the Specifications shall take precedence over the requirements of the said rules and regulations.

The subcontractor shall furnish without any extra charge any additional material and labor when required by the compliance with these rules and regulations, though the work be not mentioned in these particular Specifications or shown on the Drawings.

Any existing buildings, equipment, piping, pipe covering sewers, sidewalks, landscaping, etc., damaged by the subcontractor during the course of their work shall be replaced or repaired by the subcontractor in a manner satisfactory to the Owner's Agent and at subcontractor's own expense, and before the final payment is made. The subcontractor shall be responsible for damage caused by leaks in the piping systems being installed by him. They shall repair, at their own expense, all damage so caused, in a manner satisfactory to the Owner's Agent.

The subcontractor, personally or through an authorized and competent representative, shall supervise the work constantly, and shall as far as possible keep the same foreman and workmen on the job from commencement to completion. The workmanship of the entire job must in every way be first class, and only experienced and competent workmen will be allowed on the job.

PLANTING

Plants not meeting the specified sizes and quantities at time of inspection are subject to rejection and replacement.

Submit manufacturer's cut sheets for all other planting materials specified.

34.06 EXECUTION

IRRIGATION

Preparation

Schedule and coordinate placement of materials and equipment in a manner to effect the earliest completion of work in conformance with construction and progress schedule.

Contractor shall field verify the static water pressure at the project site prior to commencing work or ordering irrigation materials. If contractor fails to verify static water pressure prior to commencing work, contractor shall assume responsibility for all costs required to make system operational.

Examine areas and conditions under which work of this section is to be performed. Do not proceed with work until necessary conditions have been corrected.

Handling and Storage

Protect work and materials from damage during construction and storage as directed by Architect.

Handle pipe carefully; especially protecting it from prolonged exposure to sunlight.

Store sub-surface dripline and polyethylene tubing in cool dry place out of sunlight during installation.

Layout

Layout work as accurately as possible in accordance with diagrammatic drawings.

Where site conditions do not permit location of piping, valves and heads where shown, notify Architect immediately and determine relocation in a joint conference.

Run pipelines and automatic control wiring in common trenches whenever practical.

Excavating and Trenching

Excavation shall be in all cases ample in size to permit the pipes to be laid at the elevations intended and to permit ample space for joining.

Depth of trenches shall be enough to provide minimum cover from finish grade to top of pipe in trenches, as follows:

1. 18-inch minimum cover over main lines to the control valves and quick coupling valves.

2. 18-inch minimum cover over direct burial control wires from controller to valves.

3. 12-inch minimum cover over the valve controlled lines to sprinkler heads.

4. 24-inch minimum cover over sleeves.

5. 12-inch cover over subsurface drip tubing.

Restore surfaces, existing underground installations, etc., damaged or cut as a result of excavations, to original conditions in a manner approved by the Architect.

Where other utilities interfere with irrigation trenching and pipe work, adjust the trench depth as instructed by Architect.

Assembling Pipelines

All pipes shall be assembled free from dirt and pipe scale. Field cut ends shall be reamed only to full pipe diameter with rough edges and burrs removed. Connections between main lines and remote control valves shall be of Schedule 80 PVC (threaded both ends) nipples and fittings.

Risers shall be as follows: Schedule 80 PVC threaded nipples and Schedule 80 PVC ells as shown on the construction details.

Solvent Weld Joint:

1. Solvents: Use solvents and methods specified by pipe manufacturer.

2. Curing Period: Minimum of 1 hour before applying any external stress on the piping and at least 24 hours before placing the joint under water pressure.

Threaded Joint:

1. Field threading of plastic pipe or fittings is not permitted. Factory formed threads only will be permitted.

2. Factory made nipples shall be used wherever possible. Field cut threads in metallic pipe will be permitted only where absolutely necessary. When field threading, cut threads accurately on the axis with sharp dies.

3. All threaded joints shall be made up with pipe joint compound. Apply compound to male threads only.

4. Where assembling metallic pipe to metallic fitting or valve, no more than three (3) full threads shall show when joint is made up.

5. Where assembling to threaded plastic fitting, take up joint no more than one full turn beyond hand tightening.

6. Where assembling soft metal (brass or copper) or plastic pipe, use a strap type friction wrench only; do not use a metal jawed wrench.

Cap or plug openings as pipeline is assembled to prevent entrance of dirt or obstruction. Remove caps or plugs only when necessary to continue assembly.

Where pipes or control wires pass through sleeves, provide a removable non-decaying plug at ends of sleeve to prevent entrance of earth.

Remote Control Valves

Install where shown on Drawings and group together where practical. Limit one remote control valve per box with no exceptions.

Locate valve boxes 12 inches from and perpendicular to walk edges, buildings and walls. Provide 12 inches between valve boxes where valves are grouped together.

Thoroughly flush main line before installing the valve.

Install in shrub or ground cover areas where possible, or as shown on plan.

Label control line wire at each valve with a 2 1/4" x 2 3/4" polyurethane I.D. tag, indicating identification number of the valve (controller and station number). Attach a label to control wire.

Valve Boxes

Install one valve box for each type of valve unless otherwise noted.

Install boxes 12 inches from walk or header and 12 inches apart. Short side of rectangular boxes shall be parallel to walk or header. Install 2 inches above finish grade in groundcover areas and flush with grade in lawn areas.

Install common bricks as shown and as required to keep box stable. Install gravel sump after compaction of all trenches.

Gopher Wire: Install 1/2 inch wire mesh at base of all irrigation boxes. Wrap wire mesh tightly up all sides of box for sufficient seal.

Sub-Surface Irrigation

Install per manufacturer's instructions, including recommended overlap.

Install dripline in a grid pattern 12 inches below finish grade.

Install air/vacuum relief valve at the highest point of each circuit on a line that is perpendicular to the dripline rows (exhaust header or lateral connecting dripline.) Install in 6 inch round valve box.

Install manual flush valve at a point farthest away from source or along exhaust header. Install in 6 inch round valve box.

Automatic Controller

Provide and install automatic irrigation controller in valve box with remote control valve it controls.

Connect control lines to controller in sequential arrangement according to assigned identification number of the valve. Each control line wire shall be labeled at controller with a permanent non-fading label indicating station number of the valve controlled. Attach label to control wire.

Contractor is responsible for programming the controller. Provide optimum amounts of water for each plant type to maintain plants in vigorous healthy condition. Reprogram as required at end of maintenance period.

Backflow Prevention Assembly

Arrange for testing of existing backflow prevention assembly by a Certified Backflow Preventer Tester. Submit written report of test results to Owner's Representative.

Backfilling

Backfill only after piping has been tested, inspected and approved.

Backfill material shall be the earth excavated from the trenches, free from rocks, concrete chunks, and other foreign or coarse materials.

A stable and uniform bedding of at least 2" shall be provided for the pipe and any protruding features of its joints and/or fittings. The middle of the bedding, equal to 1/3 of the pipe outside diameter, may be loosely packed with the remainder compacted to a minimum of 90 percent standard proctor density. Pipe bedding material shall be Class II, clean, course grained materials, such as gravel, coarse sands and gravel/sand mixtures (1 ½ inches maximum in size.)

All pipe under asphalt paving shall be backfilled with 4 inches of clean sand on all sides of pipe.

Place backfill materials in 6 inch layers and compact by jetting or tamping to a minimum compaction of 90 percent of original soil density.

Dress off areas to finish grades and remove excess soil, rocks or debris remaining after backfill is completed.

If settlement occurs along trenches, and adjustments in pipes, valves and sprinkler heads, soil, sod or paving are necessary to bring the system, soil, sod, or paving to the proper level or the permanent grade, subcontractor, as part of the work under this Contract, shall make all adjustments without extra cost to the Owner.

Pipe Tests

Notify Architect at least three (3) days in advance of testing.

Perform testing at their own expense.

Center load piping with a small amount of backfill to prevent arching or slipping under pressure. No fitting or joint shall be covered.

Apply the following tests after weld plastic pipe joints have cured at least 24 hours.

1. Test live (constant pressure) and quick coupling valve lines hydrostatically at 125 PSI minimum. Lines shall be filled with water and pressure gauge connected to the pipe line. After lines have reached the 125 PSI, (use hydraulic pump or other safe method – do not use an air compressor) cut off the source of pressure. Lines will be approved if test pressure (with an allowable drop of 2 PSI) is maintained for two (2) hours. Should leaks develop during the test period, they shall be located and repaired and retested in the same method. The subcontractor shall make tests and repairs as necessary until test conditions are met.

2. Test remote control valve controlled lines with water at line pressure and visually inspect for leaks. Retest after correcting defects.

Remake faulty joints with new materials. Do not use cement or caulking to seal leaks.

System Adjustment

Drip System Check

1. Immediately after installation, flush lateral line piping by opening the flush valve.

2. Clean filter screens. Open filter flush valve for at least 10 seconds. Clean or replace clogged elements.

3. Verify that emitters are producing specified water output. Review system for clogs and leaks. Correct deficiencies.

Guarantee

It shall be the responsibility of subcontractor to fill and repair all depressions and replace all necessary lawn and planting due to the settlement of irrigation trenches for one year following completion and acceptance of the job.

The subcontractor shall also guarantee all materials, equipment and workmanship furnished by them to be free of all defects of workmanship and materials, and shall agree to replace at their expense, at any time within one year after installation is accepted, any and all defective parts that may be found.

Cleanup

When work of this section has been completed, and at such other times as may be directed, remove all trash, debris, surplus materials and equipment from the site.

Record Drawings

1. The subcontractor shall maintain in good order, in the field office, one complete set of bond prints of all irrigation drawings which form a part of the Contract, showing all water lines, sprinklers, valves, controllers and stub outs. Any work not installed as indicated on the Drawings, shall be recorded and dimensioned accurately from the building walls on these prints. All as-built markups shall be indicated in red.

2. All underground stub outs for future connections and valves shall be located and dimensioned accurately from building walls on these record drawings.

3. Upon completion of the work, obtain reproducible prints from Architect and neatly correct the prints to show the as built conditions.

Controller Charts

1. Record Drawings shall be accepted by Architect before controller charts are prepared.

2. Provide one controller chart for each controller supplied.

3. Charts shall be the maximum size that the controller door will allow, showing areas covered by each controller. Chart shall be an electrostatic copy and a different color shall be used to indicate area of coverage for each station. Enlarge valve sequence to be readable when drawing is reduced.

4. After being completed and accepted, seal by plastic laminating. Laminating sheets shall be a minimum of 10 mil thick.

Operations and maintenance manuals

1. Deliver to owner at least 10 days prior to completion of construction, 2 complete sets of the following data. Data shall be on 8 1/2 inch by 11 inch sheets, in a 3-ring binder.

a. Index sheet stating Contractor's address and telephone number and list of equipment with name and addresses of local manufacturer's representatives.

b. Catalog and parts sheets on all material and equipment installed under this Section.

c. Complete operating and maintenance instructions for all equipment.

d. Complete and dated manufacturer's warranties for all materials used.

2. Irrigation Maintenance Schedule to include, but not be limited to, routine inspection, adjustment, and repair of the irrigation system and its components.

Layout of Work

The irrigation contractor shall stake out the irrigation system as shown on the Drawings. Stakes shall be approved by Landscape Architect before construction is started. Any changes, deletions or additions shall be determined at this check.

Instruction

After the system has been installed and approved, subcontractor shall instruct the Owner's representative in complete operation and maintenance of the irrigation system.

Warranty

Provide 1 year guarantee for Work of this Section in accordance with Section 1700.

Provide supplemental guarantee, on Contractor's letterhead:

1. Warrant that irrigation system has been installed according to Drawings and Specifications, and that system will be free of defects in products and installation for 1 year from Substantial Completion. Manufacturer's warranties shall only supplement special warranty.

2. Agree to repair or replace defective Work, or adjacent work which is damaged by such defects, with the exception of ordinary wear and tear, abuse or neglect. This includes damage to site improvements caused by settlement of improperly compacted trench backfill.

3. Owner reserves the right to make temporary repairs as required.

The subcontractor shall pay for all permits, licenses, and fees required.

34.07 MEASUREMENT AND PAYMENT

The lump sum price payment for **Bid Item 52 "Adjust Irrigation"** shall include full compensation for furnishing all labor, materials, tools, equipment, storage, hauling, and incidentals for doing all the work involved as shown in the plans.

This is a **"Revocable Bid Item"** may be revoked at any time, including before, during or after bid opening and awarded at sole discretion of the City.

END OF SECTION

SECTION NO. 35 – FINAL INSPECTION AND PUNCHLIST

35.01 SCOPE OF WORK

Before final inspection of the work, the Contractor shall clean the work and all ground occupied by him in connection with the work, of all rubbish, excess materials (including liquid asphalt), and equipment.

Prior to the final street sweeping, all sidewalks, curbs and gutters shall be thoroughly swept clean of all dirt, dust and foreign material.

All parts of the work shall be left in neat and presentable condition.

When the work has been completed, Engineer will make the final inspection and final project walk-through with Contractor. Engineer will create a punch list of deficient items that need to be corrected by Contractor. Engineer reserves the right to add items to the Project's punch list as deemed necessary. All punch list items shall be completed within five (5) working days of notice to Contractor. Punch list items shall be accounted for in the Project construction schedule within the Project working days. Contractor shall not be granted additional working days for the completion of the punch list items.

35.02 MATERIALS

NOT APPLICABLE

35.03 EXECUTION

NOT APPLICABLE

35.04 MEASUREMENT AND PAYMENT

Full compensation for complying with the provisions of this section shall be considered as included in the contract price for the various bid items and no separate payment will be made therefor.

END OF SECTION

*****END OF SPECIAL PROVISIONS****