

# **TECHNICAL SPECIFICATIONS**

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### BID ITEM NO. 1 – CONSTRUCTION AREA SIGNS

#### **1.01 GENERAL**

Construction area signs shall be furnished, installed, maintained, and removed when no longer required in conformance with the provisions in the latest edition of the California Manual on Uniform Traffic Control Devices (California MUTCD), these Specifications, and as directed by the City Engineer or designee.

#### **1.02 SUBMITTALS**

Contractor shall submit Construction Information Sign format and content to City for review. Construction Information Sign shall include the following:

1. Name of project
2. Name of 24/7 contact name and number for contractor
3. City contact name and number
4. Starting and completion dates of the contract.
5. "Funded by voter-approved transportation dollars - Measures B and BB - which are administered by the Alameda County Transportation Commission"
6. Alameda CTC logo
7. BAAQMD logo
8. City of Alameda logo

#### **1.03 EXECUTION**

The Contractor shall notify the appropriate regional notification center for operators of subsurface installations at least 2 working days, but not more than 14 calendar days, prior to commencing excavation for construction area sign posts.

The Construction Information Sign will be erected 7 days in advance of any work.

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

Sign substrates for stationary mounted construction area signs may be fabricated from fiberglass reinforced plastic as specified under "Prequalified and Tested Signing and Delineation Materials" of these Specifications.

The Contractor may be required to cover certain signs during the progress of the work.

Signs that are no longer required or that convey inaccurate information to the public shall be immediately covered or removed, or the information shall be corrected. Covers for construction area signs shall be of sufficient size and density to completely block out the complete face of the signs. The retroreflective face of the covered signs shall not be visible

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either during the day or at night. Covers shall be fastened securely so that the signs remain covered during inclement weather. Covers shall be replaced when they no longer cover the signs properly.

Minor deviations from the requirements of this section concerning hours of work which do not significantly change the cost of the work may be permitted upon the written request of the Contractor if in the opinion of the City Engineer or designee public traffic will be better served and the work expedited. Such deviations shall not be adopted until the City Engineer or designee has indicated his written approval. All other modifications shall be made by contract change order.

If any component in the traffic control system is displaced, or ceases to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair said component to its original condition or replace said component and shall restore the component to its original location.

### **1.04 MEASUREMENT AND PAYMENT**

The contract lump sum price paid for “Construction Area Signs” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in construction area signs, complete in place, including placing, maintaining, removing and disposing of construction area signs, or any other equipment used to protect the public or designate construction areas, as shown on the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

## **BID ITEM NO. 2 – WATER POLLUTION CONTROL**

### **2.01 GENERAL**

The Contractor shall be responsible for implementing and managing these systems during the life of the project. The Water Pollution Control Program (WPCP) shall conform to all applicable requirements in Section 13-2, “Water Pollution Control,” of the Caltrans State Standard Specifications.

### **2.02 SUBMITTAL**

The Contractor shall submit a Water Pollution Control Program (WPCP) to address the storm drain and various improvements to the City Engineer or designee for approval. The WPCP shall conform to the requirements of the City of Alameda and these Specifications.

### **2.03 EXECUTION**

Water pollution control work to be included in the WPCP shall include:

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- Cleaning of vehicles by removing loose soil from the exterior of the equipment using brushes or brooms before leaving the Site.
- Sweep adjacent streets as required by the City Engineer or designee.
- Installation and effective maintenance of temporary inlet protection.
- Installation of temporary construction entrance.
- Use of concrete washout containment facility.
- Covering of stockpiles.
- Decontamination of construction equipment before leaving the premises.
- Covering of soil loads taken offsite to prevent soil tracking.
- Suspension of work upon wind gust in excess of 25 mph. At the discretion of the City Engineer or designee, work can resume if the types of work being performed are not generating large amounts of dust.
- Dewatering of excavations and disposal of water
- Use of vacuum to immediately capture all pavement/concrete sawcut slurry/waste.
- Effectively contain all wastes

Dewatering work shall include:

- Keep all excavations, including drilled shaft foundations, reasonably free from water during construction.
- Disposal of water shall not damage property or create a public nuisance.
- Have on hand pump equipment and machinery in good working condition for emergencies and workmen available for its operation.
- Dewatering systems shall operate continuously until foundations are poured or trenches are backfilled.
- Groundwater shall be controlled to prevent softening of the bottom of excavations, or formation of “quick” conditions.
- Dewatering systems shall not remove natural soils.
- Control surface runoff to prevent entry or collection of water excavations.
- Release of groundwater shall be controlled to prevent disturbance of the natural foundation soils or compact fill.
- There shall be no discharge of turbid water on site.
- Discharge or disposal of water shall be controlled to prevent erosion
- There shall be no discharge of turbid water to any storm drain inlet or arch culvert

The Contractor shall not perform work that may cause water pollution until the WPCP has been approved by the City Engineer or designee. The City Engineer's or designee's review and approval shall not waive any contract requirements and shall not relieve the Contractor from complying with Federal, State and local laws, regulations, and requirements.

#### **2.04 MEASUREMENT AND PAYMENT**

The contract lump sum price paid for prepare “Water Pollution Control Program” shall include full compensation for furnishing all labor, materials, tools, equipment, dewatering,

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and incidentals and for doing all the work involved in preparing, obtaining approval of, and amending the WPCP and inspecting water pollution control practices as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee. Full compensation for implementation and maintenance of the water pollution control program shall be considered as included in the contract lump sum price paid for Water Pollution Control and no additional compensation will be allowed therefor.

### **BID ITEM NO. 3 – CONSTRUCTION STAKING**

#### **3.01 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.

#### **3.02 EXECUTION**

Contractor shall furnish all land surveys, establish all base lines and benchmarks and make sufficient detailed surveys needed for working points, lines and elevations. The Contractor shall develop all slope stakes and batter boards. Contractor shall also develop all additional working points, lines and elevations as he or she may desire to facilitate his or her methods and sequence of construction.

All work shall be staked in order to meet the lines and grades shown on the plans. Copies of all survey cut sheets shall be provided to the City Engineer or designee two (2) working days before the planned work begins.

Finished grade elevations, pipe flowlines, and walls shall be within minus five hundredths (-0.05) foot of elevation and plan location.

Prior to concrete pouring, formwork and survey staking shall be reviewed and approved by the City Engineer or designee.

#### **3.03 MEASUREMENT AND PAYMENT**

The contract lump sum price paid for “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 the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee as may be required to complete the work.

### **BID ITEM NO. 4 – MOBILIZATION**

#### **4.01 GENERAL**

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Mobilization shall conform to the provisions in Section 9-1.16(D), "Mobilization," of the Caltrans Standard Specifications, and shall consist 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 shall 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.

The work of this bid item also 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.

### **4.02 MEASUREMENT AND PAYMENT**

The contract lump sum price paid for "Mobilization" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in preparing, obtaining approval of, and amending the Mobilization as specified in Section 9 of Caltrans Standard Specifications and these special provisions, and as directed by the City Engineer or designee.

## **BID ITEM NO. 5 – CONSTRUCTION PHASING AND TRAFFIC CONTROL**

### **5.01 GENERAL**

Construction Phasing Plan (CPP) - The Contractor is required to submit a Construction Phasing Plan and receive approval by the City Engineer or designee prior to starting on-site activities, as described herein and in the Special Provisions.

Contractor shall provide traffic control within the work zone throughout the project as needed for the various traffic situations and street configurations in full conformance with the "California Manual on Uniform Traffic Control Devices 2014 ((Federal Highway Administration (FHWA) Manual of Uniform Traffic Control Devices (MUTCD) 2009, as amended for use in California)" herein after referred to as Traffic Control Manual. The Traffic Control Manual may be obtained online at <https://dot.ca.gov/programs/traffic-operations/camutcd/camutcd-rev5>

### **5.02 SUBMITTALS**

Construction Phasing Plan (CPP) - The Contractor is required to submit a Construction Phasing Plan and receive approval by the City Engineer or designee prior to starting on-site activities. The Contractor's CPP shall take into consideration the roadway restrictions in the proposed and approved Traffic Control Plans (TCPs). The Contractor shall submit

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revised CPP(s) for any changes to the Construction Phasing Plan, including any change to the TCPs. The CPP shall be submitted within 15 working days following issuance of the Notice to Proceed (NTP), and at least 15 working days prior to the proposed start of on-site work, for review and approval by the City Engineer or designee.

Modifications to the existing traffic signal systems are the City of Alameda's responsibility. Contractor shall coordinate construction with the City Engineer or designee to ensure existing traffic systems are maintained.

Traffic Control Plans (TCPs) - The Contractor is required to submit Traffic Control Plans for each stage of construction and receive approval by the City Engineer or designee prior to starting work on an upcoming stage. The Contractor's TCPs shall take into consideration the roadway restrictions described below. The Contractor shall submit in writing a complete traffic control plan (1"=100' scale min. drawing) to the City Engineer or designee within ten (10) working days after the effective date of the Notice to Proceed. The traffic control plan shall include all locations, which involve all project improvements and shall indicate each stage of work, signage, flagman, detour routes, and any other pertinent information. The traffic control plan shall be reviewed and approved by the City Engineer or designee before the Contractor shall be allowed to begin work. The City of Alameda reserves the right to modify any portion of the plan.

The traffic control plan shall include a pedestrian detour plan to route pedestrian and bicycle traffic around the active work area affecting access. Signage shall be installed to direct pedestrians to cross at adjacent intersections/crosswalks or on the same side of the street in high pedestrian traffic areas and indicate the portions of sidewalk that will be closed to pedestrian traffic, as directed by the City Engineer or designee. Contractor shall maintain ADA compliant pedestrian access to adjacent residents during all phases of construction.

### **5.03 EXECUTION**

#### Construction Phasing Plan (CPP)

The Construction Phasing Plan (CPP) as described in the Contract Documents, including herein and Section 46 of the Special Provisions, entitled "Traffic Handling Requirements, Guidance, & Processes" shall include sufficient detail to describe how the Contractor intends to phase the work over the course of the entire project. Details for each phase of construction shall be included in the CPP. Any change to the CPP shall be reviewed and approved by the City Engineer or designee prior to implementation by the Contractor. The City of Alameda reserves the right to modify any portion of the plan. The Contractor shall not proceed with any on-site activities until the CPP is approved by the City Engineer or designee, or unless otherwise directed by the City Engineer or designee.

At a minimum, the CPP shall include the following information:

- One of the Contractor's first on-site activities shall be to place portable changeable message sign (PCMS) boards as shown in the Plans and in coordination with the



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City Engineer or designee. All of these PCMS boards shall be in place at least 10 working days prior to the start of the first construction phase.

- Proposed construction sequencing, including limits of work, type(s) of barriers to separate work areas from public areas, work hours, durations of each phase, and an overall project schedule showing how each phase is related to adjacent phases.
- Layout of the work areas, including materials storage, parking for Contractor's vehicles, and ingress and egress to/from the work areas via nearby streets, which should take into account sight lines for pedestrians, bicycles, and motorists.
- Proposed pedestrian, bicycle, and motor vehicle access ways around the work areas for each construction phase, including pedestrian circulation routes, temporary curb ramps, crosswalks, and other pedestrian facilities; bicycle circulation routes and treatments around the construction areas; and quantity, width, and direction of traffic lanes.
- General detour plans, if applicable, for any condition that would be expected to affect traffic.
- Provide a minimum of 50 contiguous feet of unobstructed curb and sidewalk space per City block face in order to accommodate the City's need to pick up curbside waste bins within the Project limits.
- Locations of temporary and/or relocated bus stops, if applicable.
- Locations of loading/staging areas for construction vehicles, which should be located inside the work area. Trucks cannot stage along adjacent frontages or other streets, in loading zones outside the site frontage, or double-park or block travel lanes. Trucking companies should be made aware of staging in only the approved areas and turned away if there is no staging area available upon their arrival.

The Contractor should be aware that the area within the project limits will remain open during the duration of construction and shall plan work accordingly. The Contractor shall include provisions to furnish and install up to five temporary signs and/or banners per phase of construction (signs specified in Bid Item No. 1). The content, type, size, and locations of the temporary signs will be as directed by the City Engineer or designee. The City anticipates that these signs/banners will be installed on construction fencing and/or supported independently near the limits of each phase of work.

In general, paving work shall be performed in phases so that traffic disruption is minimized. Final pavement markings shall be installed only after all paving activities are complete. Final pavement markings are paint and thermoplastic, as described in the bid item description for traffic striping and pavement markings. The Contractor shall furnish and install temporary pavement markings, as described in Section 12-6 of the Standard Specifications, prior to opening each phase of work. The intent of this requirement is to have clean and fresh final pavement markings at the completion of the Project.

The Contractor may only work in one phase at a time. The Contractor will not be allowed to proceed to the next phase unless the work of the previous phase is accepted by the City

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Engineer or designee. The Contractor shall provide a minimum of 10 working days advance notice to the City Engineer or designee of the planned completion of each phase. Acceptance of the work of each phase by the City Engineer or designee does not relieve the Contractor of his/her responsibility to provide temporary and/or permanent improvements suitable for use by the general public in accordance with all applicable laws, regulations, codes, requirements, and standards of practice.

### Traffic Control Plans (TCPs)

Traffic signage, e.g., warning signs and detour signs, may be required for this project. Contractor shall be responsible for placing all barricades for perimeter street closures as required. The Contractor shall provide a 30" x 30" sign advising the public of the anticipated period of time that traffic delays may be anticipated. This sign will also include name and telephone number of the Contractor along with starting and completion dates of the contract. Sign shall be erected 7 days in advance of any work.

If during construction activity, the closure of one lane of traffic is necessary, the contractor shall utilize all necessary construction zone signage, including changeable message signs, during the lane closure.

The Contractor shall be responsible for posting "No Parking" signs a minimum of four days in advance of concrete work, paving operations, failed area, and planning work so as to comply with the City's construction notification requirement of 72 hours. Cones shall not be used as barricades. "No Parking" signs may be obtained from the City at no cost to the Contractor. The "No Parking" signs shall be updated as necessary. The Contractor shall check and maintain (e.g., re-install missing signs, reposition displaced barricades, etc.) postings on a regular basis prior to start of work.

A minimum of two (paved) traffic lanes, not less than 11 ft. wide, shall remain open for use by public traffic during construction operations. When construction operations are not actively in progress, not less than two such lanes shall be open to public traffic. The Contractor may be allowed to close residential streets if approved in writing in advance by the City Engineer or designee. No work that interferes with public traffic shall be performed between 6:00 p.m. and 7:00 a.m.

If traffic is to be detoured over a centerline or detoured in advance of the work, detour plans shall be submitted to and approved by the City Engineer or designee prior to starting work. Police, Fire and Public Works Department shall be notified at least two days in advance of any work which will interfere with the normal flow of vehicular or pedestrian traffic. Intersection closure may only occur if the two adjacent intersections remain open, unless otherwise approved by the City Engineer or designee. The Contractor shall coordinate his traffic control/diversion plan with City personnel, a minimum of 3 weeks prior to starting work, to assure that traffic is diverted in a safe and convenient manner.

At the end of each day's work, and at other times when construction operations are suspended, all equipment and other obstructions shall be removed from that portion of

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roadway open for use by public traffic. No longitudinal joint shall be left during non- working hours.

Where existing road signs are in conflict with the proposed work, the Contractor shall relocate such signs to temporary or permanent locations as directed by the City Engineer or designee.

If it becomes necessary, in the opinion of the City Engineer or designee, to properly move traffic through the construction area, flagmen shall be present to slow down and reroute traffic, in which case flagmen shall be on duty the entire period the roadway is constructed. Where flagmen are not visible to each other, additional flagmen shall be added as required by the City Engineer or designee or the Contractor shall use radios.

Contractor shall take all necessary measures to obtain a normal flow of traffic to prevent accidents and to protect the work throughout the construction stages until completion of the work. The Contractor shall make the necessary arrangements to provide and maintain barriers, cones, guards, barricades, and construction warnings and regulatory signs. The Contractor shall take measures necessary to protect all other portions of the work during construction and until completion, providing and maintaining all necessary barriers, barricade lights, guards, temporary crossovers and watchmen.

In addition to the foregoing traffic control and safety measures, the Contractor shall undertake immediately to implement any measures requested by the City Engineer or designee, as they deem necessary to ensure the proper flow of traffic and the protection of the public and the safety of the workers. The Contractor shall maintain at all times the ability to respond to calls from the City of Alameda Police and Fire Departments during non-working hours to replace or provide additional traffic control or safety devices as shall be required by the Police Department.

Notwithstanding the above, the City Engineer or designee reserves the right to review and comment on each individual traffic control plan based on its own merits. Routine maintenance, inconvenience to construction method or schedule, or adverse impacts on cost of work will not generally be accepted as grounds for exceptions.

**Start of work shall be no earlier than 7:30 a.m. No work process, including starting, warm up, and delivery of equipment, shall be done outside of work hours. The use of vehicle horns to alert residents to move their vehicles out of the construction zone is not permitted. The Contractor should attempt to locate vehicle owners by knocking on doors. If Contractor violates these provisions, a fine of \$1,000 will be assessed for the first violation, \$5,000 for the second and \$10,000 for the third.**

A minimum of one lane in each direction of the traveled way shall be open for use by public traffic on Saturdays, Sundays and designated legal holidays, and when construction operations are not actively in progress, unless specified otherwise.

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Minor deviations from the requirements of this section concerning hours of work may be permitted upon the written request of the Contractor if in the opinion of the City Engineer or designee, public traffic will be better served and the work expedited. Such deviations shall not be adopted until the City Engineer or designee provides written approval.

The traffic control system shall consist of closing traffic lanes in accordance with the Traffic Control Manual. Signs and other devices for the traffic control system shall conform to the Traffic Control Manual.

If any component in the traffic control system is damaged, displaced or ceases to operate or function as specified, from any cause during the progress of the work, the Contractor shall immediately repair said component to its original condition or replace said component and shall restore the component to its original location.

Lane closures may be made for work periods only. At the end of each work period, all components of the traffic control system shall be removed from the traveled way, shoulder and auxiliary lanes. If the Contractor so elects, said components may be stored at selected central locations approved by the City Engineer or designee within the limits of the public right-of-way.

Sufficient barricades and flashing lights shall also be placed to supplement all traffic signs used to divert and control traffic. Signs and barricades shall be checked periodically every day and replaced or repaired as necessary. Any hazardous conditions shall be immediately eliminated.

**If the project is left open overnight, it shall be graded in such a way that pedestrians and vehicles can safely pass through the project area. Temporary concrete, asphalt, or wood ramps shall be installed where feasible, as determined by the City Engineer or designee, or pedestrians and vehicles routed around the project area in accordance with the approved traffic control plan.**

No vehicular traffic shall be allowed on a tack coat.

Cleanliness is extremely important. Dust producing conditions shall be eliminated as soon as they are created.

### Access and Egress

Work shall be accomplished in such a manner as to provide access to all intersecting streets and adjacent properties whenever possible. The Contractor shall endeavor to cooperate with all business owners and residents occupying properties fronting on the streets in the matter of access and egress.

Contractor shall maintain a clear and accessible pedestrian corridor around the work site to the extent feasible.

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An alternate circulation path shall be provided whenever the existing pedestrian access route in the public right-of-way is blocked by construction, alteration, maintenance, or other temporary conditions. Where possible, the alternate circulation path shall parallel the disrupted pedestrian access route, on the same side of the street.

### Residential Pedestrian Traffic Control (Type A)

Pedestrian corridor shall be a nominal width of 6 feet whenever feasible and shall conform to ADAAG guidelines. It shall not be less than 48-inches wide at single point of contact or obstruction. The Contractor shall work on one side of a street at a time so as to allow use of the opposing sidewalk by pedestrians during construction. Where approved by the City Engineer or designee, the Contractor shall block a pedestrian corridor and post signs at each corner of a block where sidewalk work is being done with the following wording in 3 inch black letters on an orange background: "SIDEWALK CLOSED TO THROUGH TRAFFIC, USE OTHER SIDE".

All driveways shall be opened between 5:00 p.m. and 8:00 a.m. on weekdays and at all times on weekends and public holidays, except those that are freshly poured. All driveways which are freshly poured may be closed for one (1) calendar day and may require plating secured with cutback at plate edges or other means to comply with this requirement. Before restricting access to driveways, the Contractor shall notify the affected residents and/or businesses, in writing, at least seventy-two (72) hours in advance.

If during the course of the work, the City agrees that it is necessary to restrict access to certain driveways for an extended period of time, the Contractor shall notify the affected residents and/or businesses, in writing, at least 10 working days in advance.

Where a business property has more than two vehicular paths of access, one path, 10 feet in width, shall remain open during all business hours, unless accepted by the City Engineer or designee.

## **5.04 MEASUREMENT AND PAYMENT**

The contract lump sum price paid for "Construction Phasing and Traffic Control" shall include full compensation for furnishing all labor (including preparation of the Construction Phasing Plan, Traffic Control Plans, and flaggers when necessary), materials (including barricades, changeable message signs, door hangers and temporary traffic delineation), tools, equipment, and incidentals and for doing all the work complete in place for each phase of construction, including all work necessary to provide for the convenience & safety of the public and to facilitate the performance of the contract work as shown on the Plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

The Contractor shall be paid on pro rata basis for the work done per month, and said payment shall be for providing all labor, material, equipment, devices, supervision, and all incidentals as are needed to provide traffic control as specified herein, and as may be required to complete the work.

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### **BID ITEM NO. 6 - DEMOLITION**

#### **6.01 GENERAL**

Demolition work shall consist of all saw cutting, removals, salvaging, stockpiling of concrete pavement, asphalt pavement, signs, trees, and other miscellaneous demolition as shown on the Plans or specified herein. The Contractor shall obtain all permits and licenses and give all notices required for performance and completion of the demolition and removal work, hauling, and disposal of debris.

Contractor shall review with City's Representative the exact limits of work and extent of materials to be removed.

- Examine site and structures and determine exact nature and status of structural elements and above ground and below ground utilities prior to commencing demolition.
- City assumes no responsibility for actual condition of items or structures to be demolished.

See Bid Item 9 for specifications for pavement marking removal.

#### **6.02 SUBMITTALS**

Contractor shall submit a schedule indicating proposed methods and sequence of operations for selective demolition work for review prior to commencement of work.

Provide a detailed sequence of demolition and removal work to ensure uninterrupted progress of adjacent building uses.

#### **6.03 EXECUTION**

Contractor shall schedule removal and reconstruction of curb, gutter, and sidewalk so that only one side of the street is under construction on any one day, and parking and unimpeded pedestrian passage remains available on the opposite side of the street.

Contractor shall provide temporary barricades and other forms of protection as required to protect the general public from injury due to selective demolition work. Provide protective measures as required to provide free and safe passage of general public. Erect temporary passageways as required by authorities having jurisdiction.

Selective Demolition: Perform selective demolition work in a systematic manner. Use methods required to complete work indicated on the plans in accordance with demolition schedule and governing regulations. Conduct selective demolition operations and debris

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removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

Landscape Demolition: Contractor shall replace existing landscape vegetation in-kind or as approved by the City Engineer or designee.

Channelizers at Westline Dr: Contractor shall remove and salvage seven (7) of the nine (9) existing channelizers in the North West corner of the intersection. Contractor shall reset channelizer on with existing foundation on the new finished surface.

Bollards at Heather Walk: Contractor shall remove and salvage bollard materials. Contractor shall reset the bollard on a new foundation which is flush to the new finished surface. Contractor shall reset Bollard post foundation in a 12" diameter hole to a depth of 24" minimum with class "C" concrete (4 sack) or as directed by the City Engineer or designee.

Traffic: Do not close, block or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from the City Engineer or designee. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

All work shall conform to ANSI A10.6, Safety Requirements for Demolition Operations and to the codes and regulations of the City. Attention is also directed to Section 15, "Existing Facilities," of the State Standard Specifications. Provide a minimum of 72 hours advance notice of demolition activities to the City Engineer or designee.

Remove Concrete and Base: Removal work shall be done in accordance with Section 15-1.03B, "Removing Concrete", of the Caltrans Standard Specifications, these Specifications, the Contract Plans and as directed by the City Engineer or designee. Contractor shall provide a minimum of 72 hours advance notice of demolition activities to the City Engineer or designee.

A power-driven pavement saw shall be used to cut existing Portland cement concrete sidewalk, curb and gutter where it is necessary to remove the concrete. The depth of the cut shall be a minimum of 1-1/2" and straight; and, if two cuts are made, they shall be parallel. The cut shall be deep enough to permit complete breakage of the concrete without ragged edges. Sawcut debris is not permitted to enter the storm drain system and shall be vacuumed up by the contractor. Damage to existing curb, gutter, sidewalk, curb ramp or driveways beyond the limits shown on the plans, field or reconstruction required by the City Engineer or designee, caused by carelessness or inefficiency of the Contractor, shall be repaired or replaced at his expense.

Remove AC Base and Surfacing: Roadway base and surfacing shall be removed as required for the roadway in accordance with Section 19, "Earthwork," of the Caltrans Standard Specifications and these Specifications, as shown on the plans, and as directed by the City Engineer or designee. This bid item also includes removal of base rock as required for the improvements.

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Where no joints exist between roadway surfacing to be removed and roadway surfacing to remain in place, the roadway surfacing shall be cut in a neat line to the full depth of the existing pavement with a power driven saw before the roadway surfacing is removed.

Where a portion of the existing surfacing is to be removed, the outline of the area to be removed shall be cut on a straight neat line with a power-driven saw to a minimum depth of 0.17 foot before removing the surfacing.

Relocate Roadside Sign: Existing signs shall be relocated at the locations shown on the plans and as directed by the City Engineer or designee. Each roadside sign shall be reinstalled on the same day if removed unless directed otherwise by the City Engineer or designee. Roadside sign posts and foundation shall conform to the County of Alameda, Design Guidelines File SD-700.

Environmental Controls: Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

Utilities: The Contractor shall call USA at (800) 642-2444 to mark the locations of all underground utilities at least 48 hours before the intended start of excavation. Any damage to any utility due to the Contractor's operations shall be repaired or replaced by the Contractor to the satisfaction of the City Engineer or designee.

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 street right of way in accordance with relevant sections of the Caltrans Standard Specifications.

Dust Control shall conform to the provisions of Section 10-5, "Dust Control" of the Caltrans Standard Specifications.

The Contractor shall receive no additional compensation for delays or inconvenience caused by utility relocations and/or adjustments. The delay caused by these relocations and/or adjustments shall not count towards the Contractors' "working days."

Clean up: The Contractor shall perform daily cleanup operations to keep the job site and adjacent properties free from accumulation of waste materials and debris resulting from the Contractor's operations. The Contractor shall deposit waste material in on-site containers or at a legal disposal area away from the site at the end of each working day. Nothing herein shall be construed as relieving the Contractor of his/her responsibility for final cleanup of the site as provided in Section 4-1.13, "Cleanup", of the Caltrans Standard Specifications.

Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to the City. If the Contractor damages an existing improvement, which is to remain, he/she shall restore such improvement to as good a condition as existed before the damage



## TECHNICAL PROVISIONS

or shall replace the improvement, when restoration is not acceptable, with an improvement of at least equal quality. Cost of such restorations or replacements shall be the Contractor's expense.

### **6.04 MEASUREMENT AND PAYMENT**

All work under this section shall be paid for at the unit price bid as shown in the bid schedule for demolition in the bidder's proposal and shall include full compensation for furnishing all labor, materials, tools, equipment, dust control, and incidentals, and for doing all the work involved in demolition work, replacement work, relocating work and salvaging of existing improvements and all related incidental work as described herein, as shown on the plans, and as directed by the City Engineer or designee.

The contract price paid per square foot for "Remove Asphalt Concrete Pavement" of the various types shall include full compensation for furnishing all labor, materials, tools, equipment, aggregate base, and incidentals and for doing all the work complete in place, including saw cutting, demolition and removal of asphalt and aggregate base, hauling, recycling, disposal, cleanup and other incidental work, as shown on the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

The contract price paid per square foot for "Remove Concrete Pavement" of the various types sidewalk, bus pad, driveway, curb, and gutter shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals and for doing all the work involved in removing and replacing concrete, complete in place, including saw cutting, demolition and removal of concrete, hauling, recycling, disposal, replacing and installing concrete of various types complete in place including aggregate base or subbase as required, subgrade preparation as shown on the plans, and other incidental work, as shown on the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

The contract unit price paid to "Remove Existing Sign" and "Remove Existing Pole" shall be paid per each and shall include full compensation for furnishing the sign and sign post, all labor, materials, tools, equipment, incidentals, installation of posts and foundations, and for doing all the work involved in installing roadway signs as shown in the plans.

The contract price paid per item to "Remove Channelizer Post" shall be paid per each and shall include full compensation for furnishing the post, all labor, materials, tools, equipment, incidentals, installation of posts and foundations, and for doing all the work involved in installing channelizer posts as shown in the plans.

Full compensation for removing, salvaging, and resetting bollards shall include all labor, materials, tools, equipment, and incidentals and for doing all the work as specified herein and as approved by the City Engineer or designee in place and shall be considered as included in the contract prices for the various items of work and no additional compensation will be made therefor.

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Full compensation for replacing existing landscape vegetation in-kind or as approved by the City Engineer or designee shall include all labor, materials, tools, equipment, and incidentals and for doing all the work as specified herein and shall be considered as included in the contract prices for the various items of work and no additional compensation will be made therefor.

Full compensation for protecting and referencing any utility in place shall be considered as included in the contract prices for the various items of work and no additional compensation will be made therefor.

Full compensation for protecting and providing temporary tree fencing in place and as indicated in the plans shall be considered as included in the contract prices for the various items of work and no additional compensation will be made therefor.

Full compensation for saw cutting shall be considered as included in the contract prices for the various items of work and no additional compensation will be made therefor.

### **BID ITEM NO. 7 – CLEARING AND GRUBBING**

#### **7.01 GENERAL**

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

#### **7.02 EXECUTION**

Clearing and grubbing shall consist of (but not limited to) removing and disposing of vegetable growth and deleterious materials in tree wells, including tree roots, grass, weeds, rocks, as well as pavement sawcut, and all other objectionable material as required to construct the improvements, as shown on the plans and as specified in these Specifications.

Prior to starting clearing and grubbing operations, the Contractor shall inform the City Engineer or designee of the intended limits of his/her clearing and grubbing operations and shall obtain the City Engineer or designee'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. All edges of existing paving to remain shall be sawcut in a neat, clean manner.

#### **7.03 MEASUREMENT AND PAYMENT**

The contract lump sum price paid for "Clearing and Grubbing" includes 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

## **TECHNICAL PROVISIONS**

material as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

Full compensation for Tree and Root Protection and Root Pruning as indicated in these Specifications and Plans shall be considered as included in the contract prices for the various items of work and no additional compensation will be made therefor.

### **BID ITEM NO. 8 – ADJUST UTILITY BOX TO GRADE**

#### **8.01 GENERAL**

Valve boxes and other similar facilities shall be adjusted to grade after sidewalk and/or pavement improvements, where applicable, in accordance with the applicable provisions of Section 15-1.03 of the Caltrans Standard Specifications. Contractor shall adhere to applicable utility agency requirements for raising utility. Adjustment of PG&E facilities shall be per 2017-2018 Greenbook Manual.

#### **8.02 EXECUTION**

Existing water valve access covers shall be adjusted to grade in accordance with the local water district standards and specifications. Water valve covers may be raised to grade during the paving operations by the water district using their own forces. Contractor shall coordinate with EBMUD.

Where frames and covers cannot be lowered flush after cold planning or before replacing asphalt surfacing, frames and covers shall be protected utilizing the following alternatives:

- Ramp section (cut-back) around "iron" and paint white
- Place lighted Portable Barricade over iron

All utility covers encountered in the area to be overlaid with Hot Mix Asphalt shall be carefully referenced out using spray chalk or similar non-permanent marking media prior to the overlay by the Contractor. Using the reference markings, the locations of the covers shall be painted on the pavement surface immediately after paving to assure they can be found in an emergency.

Covers shall be adjusted so that there will not be any perceptible difference in elevation between the finished pavement surface and the cover. The City Engineer or designee shall be the sole judge of the acceptable degree of smoothness of passage of a motor vehicle over the adjusted covers.

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

## **TECHNICAL PROVISIONS**

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

Salvaged materials which are undamaged may be reinstalled as directed by the City Engineer or designee.

Structures built of cast-in-place or precast concrete and brick or vitrified clay pipe parts shall be replaced in kind, unless otherwise permitted by the owners of the facilities.

Each of the respective utility company shall retain the ability to decrease the amount of a contract item of work or eliminate in its entirety. No adjustment to the number of working days will be made.

Contractor shall provide at least 48 hours advance notice to each respective utility agency of iron castings to be adjusted to grade.

### **8.03 MEASUREMENT AND PAYMENT**

The price paid for each "Adjust Existing Facilities to Grade" shall include full compensation for furnishing all labor, materials, coordination with Utility agency, and equipment necessary to complete the work as shown on the Plans and specified herein and as directed by the City Engineer or designee and no additional payment will be allowed therefore.

Bid price for "Adjust Existing Facilities to Grade" is a revocable item which may be revoked at any time, including before, during, or after bid opening and awarded at the sole discretion of the City. Decreases of More than 25 percent shall not apply to entire or partial deletion of work. The bid quantity shall be approved by the applicable utility agency prior to any work by the Contractor. The utility agency shall retain the right to decrease the amount of a contract item of work or eliminate in its entirety.

Full compensation for utility agency coordination associated with "Adjust Existing Facilities to Grade" shall be considered as included in the contract prices for the various items of work and no additional compensation will be made therefor.

## **BID ITEM NO. 9 – REMOVE TRAFFIC STRIPES & PAVEMENT MARKINGS**

### **9.01 GENERAL**

Specifications for removing existing traffic stripes and pavement markings are per Section 84-9 of the Caltrans Standard Specifications.

### **9.02 SUBMITTALS**

## **TECHNICAL PROVISIONS**

Contractor shall submit proposed method for removing traffic stripes and pavement markings at least 7 working days before starting the removal work.

### **9.03 EXECUTION**

Work performed on existing markings shall comply with Section 15 of the Caltrans Standard Specifications.

The Contractors shall remove traffic stripes and pavement markings before making any change to the traffic pattern. Contractor shall completely remove traffic stripes and pavement markings, including any paint in the gaps, by methods that do not remove pavement to a depth of more than 1/8 inch.

All markings on Otis are less than 15 years old and are lead free. Markings on Grand Street and Willow St may be older and may need to be tested for lead. Remove pavement marking such that the old message cannot be identified. Make any area removed by grinding rectangular. Water shall not puddle in the ground areas. Fog seal ground areas on asphalt concrete pavement. Sweep up or vacuum any residue before it can (1) be blown by traffic or wind, (2) migrate across lanes or shoulders, or (3) enter a drainage facility.

### **9.04 MEASUREMENT AND PAYMENT**

The contract lump sum price paid for “Remove Traffic Stripes & Pavement Markings” shall include full compensation for furnishing all labor, materials, traffic control, removal, disposal, and equipment necessary to complete the work as shown on the Plans and specified herein and as directed by the City Engineer or designee and no additional payment will be allowed therefore.

## **BID ITEM NO. 10 – MINOR CONCRETE SIDEWALK**

### **10.01 GENERAL**

Concrete sidewalk shall conform to Section 73 “Concrete Curbs and Sidewalks” of the Caltrans Standard Specifications, as modified in the plans, these Specifications and as 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.

Damage to the street, sidewalk, curbs and gutters from construction activities shall be repaired to the satisfaction of the City Engineer or designee.

### **10.02 SUBMITTALS**

The Contractor shall submit the concrete mix design and strength data to the City Engineer or designee for favorable review the following. Supplier's certificates showing conformance

## TECHNICAL PROVISIONS

with this specification shall be delivered to the City Engineer or designee with each shipment of materials delivered to the job site.

### **10.03 MATERIALS**

Aggregate base shall be placed under new curb and gutter and shall be four-inches (4") in thickness except where additional depth is indicated on the plans. 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.

All concrete shall be Class "A" unless otherwise specified and shall meet the requirements of the Caltrans Standard Specifications, Section 90. If it is found necessary to increase the slump of concrete at the site of the work, it shall be done only by the addition of 16 pounds of cement (1/6 sack) per gallon of water. Such addition shall be made only at the direction of the City Engineer or designee and in his presence. Strength of concrete in place shall be 3,000 psi at 28 days for concrete paving not subjected to vehicular traffic. For sidewalks subject to vehicular traffic, the strength of concrete in place shall be 4,000 psi at 28 days. No admixtures shall be used without approval of the City Engineer or designee.

All new Portland cement concrete with exposed surfaces shall be colored by adding to the mix a proportionate amount of the best quality lampblack, such proportion to be 1½ lbs. lampblack per each cubic yard.

Sidewalk and curb ramps shall be four inches (4") thick and driveway shall be six inches (6") thick. Score line shall be spaced as shown on plan or as directed by the construction inspector. All sidewalk constructed shall be given the same surface finish as the surrounding sidewalk except that the smooth jointed edge finish on both sides of the score mark will not be required.

All edges of concrete shall be edged with a cement edger of the size 2-3/4" in width with a 3/16" radius. All joints or grooves that are indicated on the plans or required by the City Engineer or designee shall be marked with cement grooves or jointers 4" in width and having a groove 3/8" wide at the top and a depth of 1/4" to 1/2".

All exposed surfaces shall be cured by the impervious membrane method to the satisfaction of the City Engineer or designee.

The name of the Contractor and the year the work is performed shall be stamped upon both ends of each single piece of any concrete work, as called for by Section No. 22-5.3 of the Municipal Code. Contractor shall obtain a load slip from each delivery and give one copy of said slip to the City Engineer or designee at the point of deliver of the material.

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All new or previously existing concrete surfaces shall be left neat, clean and free from concrete droppings. The Contractor shall be responsible for preventing vandals or others from disfiguring or defacing the finished surfaces. Any new concrete surfaces disfigured due to pouring late in the day, or due to the failure on the part of the Contractor to provide adequate protection or covering to the new surfaces, shall be replaced at the Contractor's expense. The work shall conform to Section II.S. Construction Site Control and Section III. E. Clean Up.

### **10.04 EXECUTION**

#### *Formwork*

- a. Prior to forming for concrete surface improvements, the Contractor shall pass the compaction test for the subgrade from the Geotechnical Engineer.
- b. Forms for concrete surface improvements shall be subject to the approval of the City Engineer or designee. No concrete shall be placed prior to Contractor obtaining such approval.
- c. Forms for concrete surface improvements shall have a smooth and true upper edge and the side of the form to be placed next to concrete shall have a smooth finish. Forms shall be constructed rigid enough to withstand the pressure of the fresh concrete to be placed without any distortion.
- d. All forms shall have been thoroughly cleaned prior to placement and shall be coated with an approved form oil sufficient to prevent adherence of concrete prior to filling.
- e. Forms shall be carefully set to the alignment and grade required by the plans. Forms shall be rigidly held in place by stakes set at intervals satisfactory to the City Engineer or designee. Sufficient clamps, spreaders and braces shall be installed to ensure the rigidity of the forms.
- f. Forms for back and face of curbs, lip of gutters and edge of walks, valley gutters or other surface slabs shall be equal to the full depth of the concrete as shown, noted or called for on the plans or detail drawings. Composite forms made up from benders or thin planks of sufficient ply to ensure rigidity of the form in the shape required may be used on curves and curb returns.
- g. Curb and Gutter, sidewalks, driveways and PCC pads shall have forms removed and be backfilled within 3 days after pouring.

#### *Concrete Placement*

- a. Where a portion of existing concrete surface improvements is to be reconstructed, the section to be removed shall first be separated from that to remain by means of a cut with an approved concrete saw to a minimum depth of one and one-half (1-1/2) inches at the first score line beyond the area to be replaced.
- b. All repairs to concrete surface improvements shall be made by completely removing and replacing the entire portion between the score lines or joints.

**TECHNICAL PROVISIONS**

- c. Prior to subgrade work and concrete placement, all debris and trash will be removed from all areas related to this work. Existing subgrade surface shall be re-graded (if necessary) and re-compacted to conform to the grades shown on the plans.
- d. Any concrete discolored, defaced, or otherwise damaged before official acceptance shall be cleaned, repaired or replaced at the Contractor's expense.
- e. If existing utilities are found to interfere with the permanent facilities being constructed under this Contract, immediately notify the City Engineer or designee and secure instructions. Do not proceed with permanent relocation of utilities until written instructions are received from the Civil Engineer.
- f. Contractor shall accurately grade and prepare the site to the lines and grades called for on the plans and detail drawings with due provision for future surface improvements.
- g. Surface tolerance: Finished paving surfaces shall not vary more than 1/4 inch measured with a 10-foot metal straight edge, except at grade changes. No birdbaths or other surface irregularities will be permitted. Correct irregularities to the satisfaction of the City Engineer or designee without additional cost to the project.
- h. Concrete shall be transported in truck mixers or agitators and discharged within 70 minutes of leaving the plant.
- i. All new curb and gutter, sidewalk, and PCC pads adjacent to existing concrete curb or sidewalk shall be dowelled to the existing concrete where existing concrete thickness exceeds 4 inches. The dowels shall be #4 rebar, 18 inches long at 18 inches maximum spacing. Dowels shall be embedded a minimum of 8-inches in a 5/8-inch drilled hole (existing concrete).

*Joints*

- a. Expansion joints incorporating premolded joint fillers for fixed form concrete surface improvements shall be constructed at fifteen (15) foot intervals or as appropriate to match existing pattern and at the ends of curb returns. Expansion joint filler strip shall be an approved one piece premolded 1/2" thick strip conforming to the requirements of ASTM Designation D1751 or ASTM D 994. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated. Expansion joint material shall be shaped to fit the cross section of the concrete prior to being placed.
- b. Single-Component, Self-Leveling, Silicone Joint Sealant for Concrete: Joint sealant shall conform to ASTM D 5893, Type SL. Install per manufacturer's guidelines.
- c. Scoring pattern and weakened plane joints (deep joints) shall be as indicated in the plans and approved by the City Engineer or designee.
- d. Any tree well forming required by the City Engineer or designee when placing concrete sidewalk or saw cutting necessary to conform to adjacent sidewalk shall be included in this bid item.
- e. Existing asphalt concrete shall be sawcut, removed and reconstructed for a minimum of 2-feet within edges of concrete work. Hot mix asphalt shall be a minimum thickness of 8-inches and class 2 aggregate base shall match



## **TECHNICAL PROVISIONS**

existing thickness. As approved by the City Engineer or designee, see plan 8148 “Curb and Gutter Retrofit” for additional requirements.

### *Testing*

Slump tests shall be performed by the General Contractor in the presence of the City Engineer or designee at the beginning of each day's pour and at such additional times as required by the District. Slump tests shall be made in accordance with current ASTM Designation C-143 or California Test Method No. 520 at the City Engineer or designee's discretion.

One (1) cylinder shall be sampled and tested at each project location or as directed by the City Engineer or designee.

### *Inspection*

- a. The City Engineer or designee shall inspect and approve formwork and reinforcing steel placement prior to concrete pours. The General Contractor shall provide at least 24 hours' notice that inspections are required.

## **10.05 MEASUREMENT AND PAYMENT**

Measurement and payment for “Minor Concrete Sidewalk” shall be measured by the square foot for the actual area constructed. The contract prices paid per square foot for concrete sidewalk shall include full compensation for furnishing all labor, materials, tools, formwork, placement, testing, equipment, and incidentals, and for doing all the work involved in constructing the sidewalk complete in place including aggregate base or subbase as required, subgrade preparation as shown on the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

Full compensation for repair of irrigation system resulting from installation of “Concrete Sidewalk” shall be considered as included in the contract prices for the various items of work and no additional compensation will be made therefor.

Full compensation for protecting in-place and installation of “Concrete Sidewalk” around existing storm drainage pipes shall be considered as included in the contract prices for the various items of work and no additional compensation will be made therefor.

## **BID ITEM NO. 11 – CONCRETE CURB AND GUTTER**

### **11.01 GENERAL**

Concrete Curb and Gutter shall conform to Section 73 “Concrete Curbs and Sidewalks” of the Standard Specifications, as modified in the plans and as directed by the City Engineer or designee.

## TECHNICAL PROVISIONS

Damage to the street, sidewalk, curbs and gutters from construction activities shall be repaired to the satisfaction of the City Engineer or designee.

### **11.02 SUBMITTALS**

The General Contractor shall submit the concrete mix design and strength data to the City Engineer or designee for favorable review the following.

Supplier's certificates showing conformance with this specification shall be delivered to the City Engineer or designee with each shipment of materials delivered to the job site.

### **11.03 MATERIALS**

Aggregate base shall be placed under new curb and gutter and shall be four-inches (4") in thickness except where additional depth is indicated on the plans. 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.

All concrete shall be Class "A" unless otherwise specified and shall meet the requirements of the Standard Specifications, Section 90. If it is found necessary to increase the slump of concrete at the site of the work, it shall be done only by the addition of 16 pounds of cement (1/6 sack) per gallon of water. Such addition shall be made only at the direction of the City Engineer or designee and in his presence. Strength of concrete in place shall be 3,000 psi at 28 days for concrete paving not subjected to vehicular traffic. For curbs subject to vehicular traffic, the strength of concrete in place shall be 4,000 psi at 28 days.

All new Portland cement concrete with exposed surfaces shall be colored by adding to the mix a proportionate amount of the best quality lampblack, such proportion to be 1½ lbs. lampblack per each cubic yard.

Gutter shall be as shown on plan. Where needed, gutter shall taper over 10 feet to match existing gutter width. The Contractor should be aware that existing curbs may be more than fifteen inches in depth and existing gutters may be more than eight inches in thickness and sidewalk may be more than three inches in thickness.

Score line shall be spaced as shown on plan or as directed by the construction inspector. All curb and gutter constructed shall be given the same surface finish as the surrounding sidewalk except that the smooth jointed edge finish on both sides of the score mark will not be required.

## **TECHNICAL PROVISIONS**

All edges of concrete shall be edged with a cement edger of the size 2-3/4" in width with a 3/16" radius. All joints or grooves that are indicated on the plans or required by the City Engineer or designee shall be marked with cement grooves or jointers 4" in width and having a groove 3/8" wide at the top and a depth of 1/4" to 1/2".

All exposed surfaces shall be cured by the impervious membrane method to the satisfaction of the City Engineer or designee.

All new or previously existing concrete surfaces shall be left neat, clean and free from concrete droppings. The Contractor shall be responsible for preventing vandals or others from disfiguring or defacing the finished surfaces. Any new concrete surfaces disfigured due to pouring late in the day, or due to the failure on the part of the Contractor to provide adequate protection or covering to the new surfaces, shall be replaced at the Contractor's expense. The work shall conform to Section II.S. Construction Site Control and Section III. E. Clean Up.

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

Rebar reinforcement shall be ASTM A615, Grade 60.

### **11.04 MEASUREMENT AND PAYMENT**

The linear foot cost paid for "Concrete Curb and Gutter" shall include full compensation for furnishing all labor, materials, tools, formwork, equipment, placement, testing, and incidentals, and for doing all the work involved in constructing the curb and gutter complete in place including aggregate base or subbase as required, subgrade preparation as shown on the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

## **BID ITEM NO. 12 – CONCRETE CURB RAMP**

### **12.01 GENERAL**

Concrete curb ramps shall conform to the Caltrans Standard Curb Ramp Details Plan A88A and as modified in the plans and as 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.

### **12.02 SUBMITTALS**

## TECHNICAL PROVISIONS

The General Contractor shall submit the concrete mix design and strength data to the City Engineer or designee for favorable review the following. Supplier's certificates showing conformance with this specification shall be delivered to the City Engineer or designee with each shipment of materials delivered to the job site. The General Contractor shall provide the truncated dome product submittal to the City Engineer or designee for favorable review.

### **12.03 MATERIALS**

Portland Cement Concrete for fixed form concrete surface improvements shall be minor concrete conforming to the requirements of Section 90-2 "Minor Concrete" of the Caltrans Standard Specifications with at least 505 pounds of cementitious material per cubic yard and 1-inch maximum graded coarse aggregate. No bagged mix is permitted. Hand mixing of Portland Cement Concrete for use in concrete surface improvements shall not be permitted. Strength of concrete in place shall be 3,000 psi at 28 days for concrete paving not subjected to vehicular traffic. No admixtures shall be used without approval of the City Engineer or designee.

Maximum slump of fresh concrete permitted in these items shall be 4 inches. Slump shall be determined by either ASTM C-143 or California Test Method No. 520 at the City Engineer or designee's discretion.

Concrete curb shall be secured by No. 4 reinforcing bars grouted vertically with Class "B" mortar into holes drilled into the pavement at a spacing not greater than 4 feet on centers measured along the centerline of the curb. Such bars shall be 10 inches long and the holes therefore 6 inches deep, or as indicated in the plans. The Contractor shall reinforce the curb longitudinally with a continuous No. 4 bar seated one inch below the top of the vertical reinforcing and tied to it with no. 14 wire.

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.

Truncated Domes shall be approved by the City Engineer or designee and meet requirements listed in the Part 2 of Title 24 of the California Code of Regulations Chapter 11B-705. All detectable warning surfaces shall be grey to match the existing detectable warning surfaces on the adjacent intersections.

### **12.04 EXECUTION**

Truncated dome panels shall be installed per manufacturer specifications in new curb ramps. Truncated dome panels shall be of vitrified polymer composite construction and embedded type. Color of truncated dome panel shall be approved by the City Engineer or designee.

## **TECHNICAL PROVISIONS**

### **12.05 MEASUREMENT AND PAYMENT**

Measurement and payment for each “Concrete Curb Ramp” shall include full compensation for furnishing all labor, materials, tools, form work, truncated domes, curb, gutter, equipment, testing, and incidentals, and for doing all the work involved in constructing the curb ramp complete in place, including aggregate base or subbase as required, subgrade preparation as shown on the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

### **BID ITEM NO. 13 – CONCRETE ISLAND MEDIAN**

#### **13.01 GENERAL**

Concrete Island Median 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.

#### **13.02 MATERIALS**

Portland Cement Concrete for fixed form concrete surface improvements shall be minor concrete conforming to the requirements of Section 90-2 “Minor Concrete” of the Caltrans Standard Specifications with at least 505 pounds of cementitious material per cubic yard and 1-inch maximum graded coarse aggregate. No bagged mix is permitted. Hand mixing of Portland Cement Concrete for use in concrete surface improvements shall not be permitted. Strength of concrete in place shall be 4,000 psi at 28 days for concrete paving subjected to vehicular traffic. No admixtures shall be used without approval of the City Engineer or designee.

Maximum slump of fresh concrete permitted in these items shall be 4 inches. Slump shall be determined by either ASTM C-143 or California Test Method No. 520 at the City Engineer or designee’s discretion.

Concrete curb shall as indicated in plans and specified in Bid Item 11.

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.

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

## **TECHNICAL PROVISIONS**

### **13.03 SUBMITTALS**

The General Contractor shall submit the concrete mix design and strength data to the City Engineer or designee for favorable review the following. Supplier's certificates showing conformance with this specification shall be delivered to the City Engineer or designee with each shipment of materials delivered to the job site.

### **13.04 EXECUTION**

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.

### **13.05 MEASUREMENT AND PAYMENT**

The square foot cost paid for "Concrete Island Median" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved complete in place including aggregate base or subbase as required, subgrade preparation as shown on the plans, and San Diego Buff StreetBond colored stamped treatment as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

## **BID ITEM NO. 14 – HOT MIX ASPHALT (TYPE A)**

### **14.01 GENERAL**

Specifications are for providing asphaltic concrete paving as indicated on drawings. Contractor shall protect concrete pavements and walks, curbs and bases, and other improvements adjacent to the operations with suitable materials. The Contractor shall be responsible for any damage caused by the Contractor's employees or equipment and shall make necessary repairs. All damage caused by the Contractor's operations shall be prepared or replaced as required.

### **14.02 SUBMITTALS**

Contractor shall submit Certificate of Compliance from manufacturer for approval prior to installation. Contractor shall provide submittal for each Respective manufacturer's product data for manufactured products.

### **14.03 MATERIALS**

Hot Mix Asphalt shall be Type A using the Method process and shall conform to the provision in Section 39-2 "Hot Mix Asphalt" of the Caltrans Standard Specifications and these Specifications. Hot Mix Asphalt shall be compacted to a relative compaction of not less than 95 percent.

## **TECHNICAL PROVISIONS**

Aggregate grading for the hot mix asphalt shall conform to the grading specified in Section 39-2.02B “Aggregate Gradations” of the Caltrans Standard Specifications. The base and leveling courses shall be dense graded, 3/4-inch maximum aggregate size and the surface course shall be medium graded 3/8-inch maximum aggregate size. When material used in the surface course is to be hand raked, 3/8-inch maximum size shall be used.

Asphalt binder to be mixed with aggregate shall be a steam-refined asphalt conforming to the provisions in Section 92, “Asphalt Binders” and have a viscosity grade of PG 64-10. The pavement surface upon which hot mix asphalt is to be placed and all adjacent vertical surfaces of existing pavement, curbs, gutters, etc. shall be thoroughly cleaned prior to paving. The Contractor shall furnish and operate a self-loading motor sweeper with spray nozzles before and after paving operations where feasible. All other areas will require hand sweeping. The pavement shall be free of dust, dirt, water, and vegetation prior to paving.

Asphaltic emulsion shall be applied to the surface of existing pavements preparatory to resurfacing with hot mix asphalt, and to all concrete surfaces which will be in contact with hot mix asphalt surfacing. Asphalt emulsion shall be SS-1H. The Contractor shall submit a copy of Certificate of Compliance for asphaltic emulsion

### **14.04 EXECUTION**

The surfaces upon which HMA is to be placed shall be thoroughly cleaned of all dirt, vegetation, and debris. Prior to application of tack coat, the parking lot shall be cleaned with a vacuum street sweeper and be clean of all dust. Existing paved surfaces shall be given a tack coat by spraying with penetration type emulsified asphalt (Type SSI) at the rate of 0.05 to 0.10 gallon per square yard as directed by the Engineer.

The HMA shall be placed and compacted in the excavation, after compaction of subgrade to 95% to the grade of existing road pavement. The HMA shall be placed in 3-inch maximum lifts after compaction. Conform sections shall be squared off and hand raked to a neat straight line. Edges at curb shall be hand raked and rolled with a small roller or tamper when larger roller cannot be used.

Finished pavement shall be free from ripping, ruts, humps, depressions, improper conforms, and other irregularities per the State Standard Specifications. Unacceptable paving shall be removed by cold planing and repaved 1-inch deep.

### **14.05 MEASUREMENT AND PAYMENT**

The work of Hot Mix Asphalt (Type A) will be measured by the tons of asphalt installed. The Contractor will not be paid for asphalt thickness above that which is specified. Contractor shall submit asphalt tags upon arrival of the delivery truck, or as directed by the City Engineer or designee.

## **TECHNICAL PROVISIONS**

The contract price paid per ton for “Hot Mix Asphalt (Type A)” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in furnishing and placing hot mix asphalt and applying paint binder, aggregate base or subbase as required, subgrade preparation as shown on the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

### **BID ITEM NO. 15 – BUS STOP BENCHES**

#### **15.01 – GENERAL**

Specifications for installing bus stop benches as indicated in the plans. Bus benches will be provided by the City of Alameda.

#### **15.02 SUBMITTALS**

Not applicable.

#### **15.03 MATERIALS**

Benches will be provided by the City of Alameda Maintenance Department 1616 Fortmann Way, Alameda, CA 94501. Contractor shall coordinate with the City Maintenance Department to procure the benches. Benches shall be inspected for damage before pick up. The contractor shall immediately notify the City Maintenance Department of any damage that took place under the contractor’s supervision.

#### **15.04 EXECUTION**

Benches to be assembled and installed in accordance with manufacturer’s specifications. Bus stop bench shall be installed per AC Transit and City of Alameda guidance for placement, installation hardware and installation method. Contractor shall confirm with the City Engineer or designee the placement of each bench prior to final installation.

#### **15.05 MEASUREMENT AND PAYMENT**

The contract unit price paid per linear foot for “Bus Stop Benches” shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in procuring and installing bus stop benches as shown in the plans, as specified in these Specifications, and as directed by the City Engineer or designee.

### **BID ITEM NO. 16 – CURB PAINT**

#### **16.01 GENERAL**



## **TECHNICAL PROVISIONS**

Specifications for providing and installing curb paint as indicated.

### **16.02 SUBMITTALS**

For each lot or batch of paint, submit:

1. Certificate of compliance, including the product name, lot or batch number, and manufacture date
2. METS notification letter stating that the material is authorized for use, except for thermoplastic
3. Safety Data Sheet (SDS)

### **16.03 MATERIALS**

Paint for curb markings shall be consistent with Standard 84-2.02C of the Standard Specifications and these Specifications.

Curb markings must be paint not thermoplastic and are to be Acrylic Emulsion Paint for Exterior Masonry Acrylic emulsion paint for exterior masonry must comply with the MPI detailed performance standards for exterior latex paint and must be listed on one of the following MPI approved products lists: MPI list no. Category name 10 Latex, exterior flat (MPI gloss level 1) 11 Latex, exterior semi-gloss (MPI gloss level 5) 119 Latex, exterior gloss (MPI gloss level 6).

Paint type shall be Waterborne Traffic Line or approved equal for international symbol of accessibility and other blue and red curb marking conforming to the Federal Specification TT-P-1952E and must comply with ASTM D6628.

Paint type shall be Waterborne Traffic Line white or approved equal conforming to the Caltrans Specification PTWB-01R2.

### **16.04 EXECUTION**

#### **Quality of Assurance**

Before starting permanent application of two-component painted markings, apply a test stripe of the paint on roofing felt or other suitable material in the presence of the City Engineer or designee. The test section shall be at least 10 feet in length.

#### **Control of Alignment and Layout**

Curb markings shall conform to the dimensions and details shown on the Plans. The Contractor shall establish curb markings between control points by string line or other method approved by the Engineer. Curb markings shall be spotted in advance of application

## TECHNICAL PROVISIONS

by using a rope as a guide for marking spots every 5 feet, by using a marking wheel mounted on a vehicle, or by another method approved by the Engineer.

### **Construction**

1. Surface Preparation shall be done in accordance to Section 84-2.03B of the Caltrans Standard Specifications and these Specifications. Before applying paint, the existing surface shall be cleaned. Areas which cannot be satisfactorily cleaned shall be scrubbed with a water solution of tri-sodium phosphate (10 percent Na<sub>3</sub>PO<sub>4</sub>) or other cleaning solution approved by the Engineer. After cleaning, the surface shall be rinsed with water and dried before painting. The cleaning solution and rinse water shall not be allowed to enter any storm drain or natural water course.
2. Mechanical mixers shall be used to mix paint. Prior to application, paint shall be mixed a sufficient length of time to thoroughly mix the pigment and vehicle together, and shall be kept thoroughly agitated during application.
3. Paint shall be applied only when: a) the pavement surface is dry and clean, b) the temperature is above 50F and below 85F, c) the weather is not rainy, windy, foggy, or humid d) the forecast temperature is within the paint manufacturer's recommended range. Apply paint for a pavement marking by hand
4. Installation of curb paint shall be done in accordance to Section 84-2.03C(3) of the Caltrans Standard Specifications and these Specifications. Curb marking shall be a longitudinal line covering the top and face of a curb. The marking must extend to, but not beyond, curb wick line and flowline, or in the case of an AC dike, covering the top and face to the flowline.

### **16.05 MEASUREMENT AND PAYMENT**

The contract unit price paid per linear foot for "Curb Paint" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in painting red curbs as shown in the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

## **BID ITEM NO. 17 - PAINT STRIPING AND MARKINGS**

### **17.01 GENERAL**

Specifications for providing and installing traffic striping and pavement markings in paint on pavement as indicated. Paint traffic stripes and pavement markings on pavement shall be installed only on Grand Street within the limits stated on the plans.

### **17.02 SUBMITTALS**

## TECHNICAL PROVISIONS

For each lot or batch of paint and glass beads, submit:

1. Certificate of compliance, including the product name, lot or batch number, and manufacture date
  2. METS notification letter stating that the material is authorized for use, except for thermoplastic
1. Safety Data Sheet (SDS)

For glass beads used in drop-on applications, submit a certificate of compliance and test results for each lot of beads specifying the EPA test methods used and tracing the lot to the specific test sample. The testing for lead and arsenic content shall be performed by an independent testing laboratory.

Submit retro reflectivity readings for traffic stripes and pavement markings at locations with deficient retro reflectivity determined by the City Engineer or designee.

See Section 18 for Technical Specifications for Retroreflective Pavement Markers (Striping Detail 38)

### **17.03 MATERIALS**

Paint for traffic stripes shall be consistent with Standard 84-2.02C of the Caltrans Standard Specifications and these Specifications

Paint type shall be Waterborne Traffic Line white and yellow conforming to the requirements of Caltrans Standard Specification PTWB-01R2.

Glass Beads shall be installed per Section 84-2.02D and comply with Caltrans Standard Specification 8010-004.

### **17.04 EXECUTION**

#### **Quality Assurance**

Quality Assurance shall be tested in accordance with Section 84-2.01D of the Caltrans Standard Specifications and these Specifications.

#### **Construction**

Install paint traffic stripes and markings on pavement per Section 84-2.03C(3) of the Caltrans Standard Specifications and these Specifications.



### **17.05 MEASUREMENT AND PAYMENT**

## **TECHNICAL PROVISIONS**

The contract unit price paid per linear foot for painted pavement striping is the length measured along the line of the traffic stripe without deductions for gaps in the broken traffic stripe, inclusive of reflectors. A painted traffic stripe consisting of two 6-inch-wide yellow stripes is measured as 2 traffic stripes.

The contract price paid for painted pavement striping 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 striping as shown in the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

The contract unit price paid per square foot for painted pavement markings is the area covered and 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 Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

### **BID ITEM NO. 18-THERMOPLASTIC STRIPING AND MARKINGS**

#### **18.01 GENERAL**

Specifications for providing and installing thermoplastic traffic striping and pavement markings and retroreflective markers on pavement as indicated.

#### **18.02 SUBMITTALS**

For each lot or batch of thermoplastic and glass beads, submit:

1. Certificate of compliance, including the product name, lot or batch number, and manufacture date
2. METS notification letter stating that the material is authorized for use, except for thermoplastic
3. Safety Data Sheet (SDS)
4. Material data sheet for thermoplastic primer

For each lot or batch of thermoplastic, submit a manufacturer's certificate of compliance with test results for the tests specified in section 84-2.01D. The date of test shall be within 1 year of use.

For glass beads used in drop-on applications and in thermoplastic formulations, submit a certificate of compliance and test results for each lot of beads specifying the EPA test

## **TECHNICAL PROVISIONS**

methods used and tracing the lot to the specific test sample. The testing for lead and arsenic content shall be performed by an independent testing laboratory.

Submit retro reflectivity readings for traffic stripes and pavement markings at locations with deficient retro reflectivity determined by the City Engineer or designee.

Submit a certificate of compliance for each type of pavement marker used.

### **18.03 MATERIALS**

Traffic stripes and pavement markings shall comply with Section 84-2.02C of the Caltrans Standard Specifications and these Specifications.

Thermoplastic shall comply with Caltrans Standard Specification PTH-02SPRAY, PTH-02HYDRO, or PTH-02ALKYD.

Glass Beads shall comply with Section 84-2.02D of the Caltrans Standard Specifications and comply with Caltrans Standard Specification 8010-004.

Pavement markers shall comply with Section 81-3.02C of the Caltrans Standard Specifications. Hot melt bituminous adhesive shall comply with 81-3.02D of the Caltrans Standard Specifications

### **18.04 EXECUTION**

Surface preparation shall be in accordance with Section 84-2.03B of the Caltrans Standard Specifications and these Specifications.

#### **Quality Control and Assurance**

Thermoplastic shall be tested in accordance to Section 84-2.01D of the Caltrans Standard Specifications.

#### **Construction**

Apply thermoplastic traffic stripes and markings per Section 84-2.03C(2) of the Caltrans Standard Specifications. Apply retroreflective markers per Section 81-3.03 of the Caltrans Standard Specifications.

### **18.05 MEASUREMENT AND PAYMENT**

The contract unit price paid per linear foot for thermoplastic pavement striping is the length measured along the line of the traffic stripe without deductions for gaps in the broken traffic stripe, inclusive of reflectors. A double extruded thermoplastic traffic stripe consisting of two 6-inch-wide yellow stripes is measured as 2 traffic stripes.

## **TECHNICAL PROVISIONS**

The contract price paid for thermoplastic pavement striping 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 striping as shown in the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

The contract unit price paid per square foot for thermoplastic pavement markings is the area covered and 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 Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

Retroreflective markers included in pavement striping details shall be included in the contract unit price paid for linear foot for thermoplastic pavement striping. Blue retroreflective markers to indicate fire hydrants shall be paid per each marker, and 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 markers as shown in the plans.

### **BID ITEM NO. 19 – METHYL METHACRYLATE MARKING (GREEN)**

#### **19.01 GENERAL**

The material for the green bicycle lane delineation (green marking) shall be methyl methacrylate conforming to this section. Material shall be anti-slip treated methyl methacrylate and does not need to be retro-reflective.

The manufacturer shall be ISO 9001:2008 certified for design, development and manufacturing of colored pavement materials, and provide proof of current certification.

#### **System Description**

Properly designed roadway pavement coatings have been scientifically formulated to provide the optimal balance of performance properties for a durable, long lasting color and texture to a roadway pavement surface. Some of these key properties include wear and crack resistance, color retention, adhesion, minimal water absorption and increased friction properties. As well, the roadway pavement coating shall be environmentally safe and meet EPA requirements for Volatile Organic Compounds (VOC).

The material shall be capable of being applied on bituminous and/or Portland cement concrete pavements and shall be able to be applied after 30 days of placement. The use of a compactor or similar equipment shall not be necessary. The material shall be able to be applied to asphalt and concrete surfaces without preheating the application surface to a specific temperature.

## TECHNICAL PROVISIONS

The material shall be capable of conforming to pavement contours, breaks and faults through the action of traffic at normal pavement temperatures. It shall not be necessary to use a grid template or to make pattern grooves or other indentations in the asphalt or concrete surface prior to applying the material. It shall not be necessary to inlay the material in grooves or indentations. It shall not be necessary to heat the pavement or application surface to a specific temperature.

### 19.02 SUBMITTALS

1. Confirmation of coating color.
  - a. Green: The color shall meet the FHWA guidance for the chromaticity coordinates for bicycle lane coloration. Material shall be tested according to ASTM D 154 Exposure Condition Cycle 1 D65/2 Daytime Chromaticity at 144 hours of exposure. Values for Green Bike lane color shall be X-0.3367/Y-0.4846.
2. Confirmation of anti-skid / anti-slip properties of coating material.
3. Material Warranty
  - a. Manufacturer provides a full warranty covering 100 percent of the pavement marking materials for one year.
  - b. Contractor is responsible for quality control of the proper placement of the materials and all other factors that affect the service life of the materials.
  - c. Contractor removes and replaces 100 percent of the markings for all failed sections at no cost to the City in the event of a performance failure.
4. Provide Material Safety Data Sheets (MSDS) when material is delivered
5. Provide documentation of the manufacturer and production batch identification for the covering used

### 19.03 DELIVERY, STORAGE, AND HANDLING

According to manufacturer's recommendations.

### 19.04 MATERIALS

The Methyl Methacrylate (MMA) Acrylic Resin Material shall be a 98:2 formulated material capable of being sprayed. No other substitutes (i.e. 4:1, 1:1) MMA material formulations shall be permissible. Material shall be Color-Safe as manufactured by Transpo Industries, Inc.

Shall be resistant to the detrimental effects of motor fuels, antifreeze, lubricants, hydraulic fluids

## TECHNICAL PROVISIONS

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 shall be uniformly distributed throughout the material. The pigment system shall 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.

Skid Resistance: Upon application the material shall provide a minimum skid resistance value of 60 BPN when tested according to ASTM E 303 or minimum value of 40 when tested according to ASTM E 274.

Hardness: The material shall meet a minimum hardness value of 55-60 per ASTM D2240.

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

The material shall be able to be applied in temperatures down to 40 °F.

Performance Measures for Durability. Minimum Durability – 90 percent of each colored area, legend, or symbol shall be present. Failure to meet any of the specified performance measures on at least 90 percent of the colored area is considered a failure. The City Engineer or designee may require partial or complete replacement of the colored area under the warranty terms. Failure to meet any of the specified performance measures on at least 90 percent of the legend or symbol is considered a complete failure of that legend or symbol. Replace under the warranty terms.

Elongation of material resin should have a minimum of 30% when tested in accordance with ASTM D638 Type I.

Compressive Strength of mixed material shall be between 2000-3000psi when tested in accordance with ASTM 579 Method B.

Water Absorption shall be a maximum of 0.25% when tested in accordance with ASTM D570.

Solids Content should be a minimum of 99% when tested in accordance with ASTM D1644.

Aggregate: A minimum of 7.0 on the Mohs Hardness Scale and Specific Gravity of 2.65 when tested by ASTM C128.

### **19.05 EXECUTION**

#### **Preparation**



## TECHNICAL PROVISIONS

- Depending upon the condition and age, existing roadway pavement may or may not be suitable for the successful application of pavement coating. CONTRACTOR can advise whether the roadway pavement is suitable or not. The City Engineer or designee shall make the final determination as to the suitability of the existing roadway pavement.
- Contractor is responsible for all surface preparation such as de-greasing, sweeping, power blowing, shot-blasting or power washing, in accordance with manufacturer's instructions.
- Line control.
  - Establish control points prior to application.
  - Pavement markings that are to be left in place, utilities, drainage structures, curbs and any other structure within or adjacent to the treatment location shall be masked to protect from application. Masking material to be removed with no damage after material is placed.
  - Maintain line within 2 inches of the established control points and mark the roadway between control points as needed. Remove paint that is not placed within tolerance of the established control points and replace at no expense to the OWNER.

### **Application Guideline**

- A certified applicator shall install, or an approved manufacturer's representative shall be present on the jobsite for the first day of application of the methyl-methacrylate based colored pavement material. The manufacturer's representative shall provide the City Engineer or designee and Contractor with a copy of written recommendations, technical data sheet complete with application instructions and a product safety data sheet available to anyone that will be exposed to the methyl-methacrylate colored pavement marking system. The manufacturer's representative shall have extensive application experience in the installation of methyl-methacrylate colored pavement systems and provide a resume of project completed.
- The substrate shall be completely dry and the surface thoroughly clean before application of the methyl-methacrylate Colored Pavement Marking System coating. The material shall cover the entire application area and be flush across the surface. Once applied, no part of the pavement surface shall be visible in the application area.
- Asphalt: The material shall be applied using equipment recommended by the Manufacturer's instructions. The material shall be able to be applied at ambient and road temperatures down to 40 °F without any preheating of the pavement to a specific temperature. A sealer or primer specified by the manufacturer may be applied to the Asphalt prior to material application to ensure proper adhesion, and to provide reinforcement for larger volumes of material. A thermometer shall not be required during the application process. The pavement shall be clean, dry and free of debris.
- Portland Cement Concrete: The same application procedure shall be used as described above in C. When applying to PCC pavement, a Methyl-Methacrylate Primer shall be used. Primer shall be mixed and applied according to manufacturers recommended instructions and completely cured before application of the Colored Pavement Marking material.

## **TECHNICAL PROVISIONS**

- No Track Topcoat: Upon and/or during cure (i.e. wet-on-wet) of the Colored Pavement Marking Material, a Methyl-methacrylate based No Track Topcoat shall be mixed and applied (rolled or sprayed) according to manufacturers recommended instructions.
- Catalyst for the methyl-methacrylate Colored Pavement Marking Material System will be added at the recommendation of the manufacturer dependent on ambient and pavement temperature for methyl-methacrylate Primer, Colored Pavement Marking Material and Top Coat.
- Final thickness: The material shall be supplied at a minimum thickness of 80 mils.
- Equipment: Application/spray equipment shall utilize static mixers for thorough mixing of the of resin and BPO catalyst. Resin and BPO shall not come in contact until just prior to entering the static mixer. A reversible spray tip shall be mounted directly at output of static mixer. Equipment with mixed resin and catalyst in hoses downstream of static mixer will not be accepted. Equipment shall have an electronic, adjustable over and under pressure safety circuit in place on the catalyst pump that will stop the machine if the set pressure is exceeded. In addition, machine shall have an audible low-pressure alarm that sounds if the pressure drops below the setpoint (usually about 1000 PSI). Equipment without an electronic over pressure failsafe and audible low-pressure alarm will not be accepted. A factory technician shall be on site during project to assure proper use and operation of the equipment.

### **19.06 MEASUREMENT AND PAYMENT**

The contract unit price paid per square foot for methyl methacrylate marking (green) shall be for the area covered and 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 markings as shown in the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

## **BID ITEM NO. 20 – K-71 POSTS**

### **20.01 GENERAL**

Specifications for providing and installing brown K71 traffic channelizer posts on pavement as indicated.

### **20.02 SUBMITTALS**

Contractor shall submit shop drawings and diagrams indicating dimensions of traffic channelizers including mounting equipment.

### **20.03 MATERIALS**

Traffic channelizer posts shall have a Brown post color and a White film color and shall conform to US Reflector specification sheet and CA MUTCD Section 3H.01. Each post shall

## **TECHNICAL PROVISIONS**

have a minimum 2.25-inch diameter, be 42-inches tall and constructed of white PVC / polyethylene. Posts shall have a minimum 3-inch by 12-inch retroreflective surface. Each post shall be equipped with an internal zinc-coated spring and mounted onto a rigid base designed for bolt/screw-in installation into asphalt. The posts shall be designed to withstand 60 mph impact while maintaining 360-degrees of flexibility

Contractor shall install a portable delineator in accordance with the US Reflector specification sheet and with Section 12-3.04B of the Caltrans Standard Specifications and these Specifications.

### **20.04 EXECUTION**

#### **Construction**

Install channelizers in accordance with the US Reflector specification sheet and with Section 12-3.05C of the Caltrans Standard Specifications and these Specifications.

### **20.05 MEASUREMENT AND PAYMENT**

The contract unit price paid per each “Channelizer Posts” 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 posts as shown in the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.

## **BID ITEM NO. 21 – ROADSIDE SIGN**

### **21.01 GENERAL**

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

### **21.02 SUBMITTAL**

Submit a certificate of compliance for:

1. Aluminum sheeting
2. Retroreflective sheeting
3. Screened-process colors
4. Nonreflective, opaque, black film
5. Protective-overlay film

## TECHNICAL PROVISIONS

Upon request, submit test samples of sign panels and materials at various stages of production. The samples shall be at least 12 by 12 inches and include the background material and legend.

At least 15 days before starting sign fabrication, submit at least 3 copies of your QC plan for sign panels. The QC plan shall include:

1. Contact information for the person responsible for sign QC
2. Acceptance criteria for incoming raw materials at the fabrication plant
3. Type, method, and frequency of QC testing at the fabrication plant
4. Types and brand names of retroreflective sheeting
5. List of the retroreflective sheeting manufacturer's approved process colors, protective overlay film, and black nonreflective film, including the manufacturer's name and product name for each item
6. Manufacturer's installation and splicing instructions for the retroreflective sheeting
7. Manufacturer's instructions for cleaning each product
8. Method of packaging, transporting, and storing signs

### **21.03 MATERIALS**

Signs shall be installed per Section 82-2.02 of the Caltrans Standard Specifications and these Specifications.

Contractor shall make sure retroreflective sheeting follows Section 82-2.02C

Roadside signs shall be found in the plans

### **21.04 EXECUTION**

1. Existing road signs shall be removed and salvaged or reused as shown on plans. Foundations and poles shall be removed and legally disposed of outside of the Right-of-Way. Metal signposts 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 than ¼" shall not be allowed.
2. 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 or designee.
3. Roadside signs and mounting shall be installed at the locations shown on the plans, or where directed by the City Engineer or designee and shall conform to the provisions in Section 56-4, "Roadside Signs," of the Caltrans 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.

## TECHNICAL PROVISIONS

### 21.05 MEASUREMENT AND PAYMENT

The contract unit price paid to “Install New Sign” and “Install New Pole” shall be paid per each and shall include full compensation for furnishing the sign and sign post, all labor, materials, tools, equipment, incidentals, installation of posts and foundations, and for doing all the work involved in installing roadway signs as shown in the plans.

The contract unit price paid to “Relocate Bus Stop Signs” shall be paid per each and shall include full compensation for furnishing the sign and sign post, all labor, materials, tools, equipment, incidentals, installation of posts and foundations, and for doing all the work involved in installing roadway signs as shown in the plans.

### BID ITEM NO. 22 – RECTANGULAR RAPID FLASH BEACON SYSTEM

#### 22.01 GENERAL

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.

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

Related work specified elsewhere: Signage

#### 22.02 SUBMITTALS

Submit catalog and installation information for a Rectangular Rapid Flashing Beacon System Assembly (includes pedestrian push button for RRFB activation). The Rectangular Rapid Flashing Beacon System shall include the following components:

- A. AC powered supply (1 per intersection/crossing)
- B. Rectangular Rapid Flashing Beacon (RRFB) unit (1 per location shown on the plans)
- C. 45W solar panels and 35 AHr battery (1 per pole that requires power for RRFB unit(s))
- D. Spread spectrum wireless radio (1 per pole that requires power for RRFB unit(s))
- E. Polara "Bulldog" push button, by Polara Inc., or approved equal (Note: one push button each shall be mounted to a bollard separate from the RRFB pole and wired to the controller as shown on the plans)
- F. Type 1-B 4" ID pole with mounting hardware (1 per location shown on the plans)  
Note: Signage shall be applied to the RRFB poles as per the sign schedule on the plans and California MUTCD standards.

## **TECHNICAL PROVISIONS**

### **22.03 MATERIALS**

Requirements: System shall be fully compliant with applicable FHWA and CA MUTCD guidelines and equipped with a GPRS EDGE modem and GPS receiver attached to its antenna unit. 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.

Activation Devices: Shall consist of one (1) push button each mounted to the RRFB pole connected to the RRFB controller per the manufacturer's recommendations.

Pullboxes;.No.6 Concrete Pull Box with bolt down covers as manufactured by Christy, Quazite or approved equal. Provide all pull boxes with hold down locking box inserts by McCain Security or approved equal.

Communication Protocols: Each controller shall be equipped with a GPRS EDGE modem and GPS receiver attached to its antenna unit. No local host or client software shall be required.

Remote Management: The controller shall be remotely managed for purposes of activation duration setting and maintenance. Remote management may be performed over a cellular M2M network and the internet from anywhere an internet connection can be made by a capable device.

On-Demand Activation, Test and Reports: Each system shall provide on-demand activation of RRFBs for emergency or any other purposes; on-demand test of communication interruption (knockdown), beacon outage, and activation reports through the user interface.

Proactive Diagnostics: Each system shall generate proactive daily RRFB outage, battery health and communication interruption (knockdown) diagnostics delivered by email to a configurable set of recipients.

## **TECHNICAL PROVISIONS**

**Mechanical and Electrical Specifications:** The controller shall be housed in a vandal resistant NEMA 3R pole-mounted cabinet with a lockable, hinged door.

**Power:** The controller unit shall be AC powered 90-264 VAC Input, 6-14 AWG with replaceable AC-DC power supply, circuit breaker, and terminal block wiring.

**Battery:** The system shall include a 12V battery system with 75 Ahr capacity.

**Warranty:** The Rectangular Rapid Flashing Beacon System and its components shall be supported by a five-year warranty.

**Pole:** New poles as indicated in the plans shall be Type 1-B measuring 10 feet from the finished grade. Pole foundation shall be per Caltrans Standard Plans ES-7M.

### **22.04 EXECUTION AND TESTING**

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.

### **22.05 MEASUREMENT AND PAYMENT**

The contract unit price paid for single-sided and double-sided RRFB assemblies shall be paid per each and shall include the light bars, equipment enclosure cabinet and associated equipment as noted in the materials section of this Technical Specification.

The contract unit price paid for 1-B pole and foundation shall be per each and shall full compensation for excavation, installation, backfill and repair and connection to the RRFB system.

The contract unit price paid for pedestrian push buttons shall be per each and shall include compensation for connecting and programming to the RRFB system.

The contract unit price paid for pull boxes shall be per each and shall include compensation for demolition, excavation, installation and repair of the surrounding minor concrete sidewalk.

The contract unit price paid for trenching and conduit installation shall be paid as a lump sum and shall include full excavation for excavating, installing, backfilling and wiring to the RRFB system.

## **TECHNICAL PROVISIONS**

All work under this section shall be included in the price bid for the various Rectangular Rapid Flashing Beacon system components and shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in providing and installing a fully-functional the Rectangular Rapid Flashing Beacon Crosswalk Lighting System, push buttons, trenching and wiring of push buttons to RRFB controllers, complete and in place as shown on the plans, as specified in these Special Provisions, by the manufacturers specifications, and as directed by the City's Representative.

### **BID ITEM NO. 23 – BIKE RACKS**

#### **23.01 – GENERAL**

Specifications for installing bike racks as indicated in the plans. Bike racks will be provided by the City of Alameda.

#### **23.02 SUBMITTALS**

Not applicable.

#### **23.03 MATERIALS**

Bike racks will be provided by the City of Alameda Maintenance Department 1616 Fortmann Way, Alameda, CA 94501. Contractor shall coordinate with the Rochelle Wheeler of Transportation Planning Unit to procure the bike racks. Her contact information is 510-747-7422 or [rwheeler@alamedaca.gov](mailto:rwheeler@alamedaca.gov).

#### **23.04 EXECUTION**

Bike racks to be assembled and installed in accordance with manufacturer's specifications for installation hardware and installation method. Bike racks shall be installed per City of Alameda guidance for placement and per the orientation and position indicated in the plans. Contractor shall confirm with the City Engineer or designee the placement of each bike rack prior to final installation.

#### **23.05 MEASUREMENT AND PAYMENT**

The contract unit price paid per each "Bike Rack" shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in procuring and installing bike racks as shown in the plans, as specified in these Specifications, and as directed by the City Engineer or designee.

### **BID ITEM NO. 24 – STREET BOND**

#### **24.01 – GENERAL**



## TECHNICAL PROVISIONS

Specifications for installing StreetBond SB120 Asphalt Pavement Coating Flat Surface (Non Stamped). Section includes: Solar reflective coating system over non-stamped asphalt pavement

### Reference Standards

ASTM D4541	Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Tester.
ASTM D4060	Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
ASTM D2697	Standard Test Method for Volume of Nonvolatile Matter in Clear or Pigmented Coatings.
ASTM D522-93A	Standard Test Method for Mandrel Bend Test of Attached Organic Coatings.
ASTM D1653	Standard test method for water vapor transmission through organic film coatings.
ASTM G154	QUV Accelerated Weathering Environment. Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials.
ASTM D2369	Weight Solids Standard test method for Volatile Content of Coatings.
ASTM D1475	Standard Test method for Density of Paint, Varnish, Lacquer, Other related products.
ASTM D2240 (2000)	Standard Test Method for Rubber property – Durometer hardness.
ASTM D5895	Standard Test Method of drying or curing during film formation of organic coatings using mechanical recorders.
ASTM D570	Standard Test Method for water absorption of plastics.

### Definitions

**Certified Applicator:** Applicator that has been certified by the manufacturer to install pavement coatings per specifications and offer warranties backed by the manufacturer.

**Owner:** means the Owner and refers to the representative person who has decision making authority for the work performed.

### 24.02 SUBMITTALS

## TECHNICAL PROVISIONS

- A. Shop Drawings: Submit layout plans drawn to scale and coded to show where coating is applied, indicating colors by section, and enabling calculation of total square feet by color.
- B. Color Samples: Submit manufacturer's color charts or sample drawdowns of colors to be applied.
- C. Product Data: Submit manufacturer's Technical Data Sheets (TDS) and Safety Data Sheets (SDS) of products being applied.
- D. Application Instructions/Rates: Submit manufacturer's application instructions/rates to achieve desired finished product dry mil thickness.
- E. Maintenance Instructions: Submit maintenance and cleaning instructions.

### 24.03 MATERIALS

#### Manufacturers

- A. Siplast (Irving TX) manufactured pavement coating products.
  - 1. StreetBond SB120 Pavement Coating (Part A & B)
  - 2. StreetBond Colorant
  - 3. StreetBond Adhesive Promoter (for exposed stone in older asphalt)
  - 4. StreetBond Sealer Concentrate

#### Materials

- A. Asphalt Pavement Coating: A premium epoxy-modified, acrylic, waterborne coating designed for application on asphalt pavements receiving pedestrian traffic and minimal vehicular traffic. The coating shall be specially formulated to provide wear and crack resistance, color retention, adhesion, minimal water absorption and increased friction properties. Coating materials shall meet all local Volatile Organic Compounds (VOC) regulations.
  - 1. Coating Properties
    - a) Solids by Volume: 54 - 61% (ASTM D2697)
    - b) Solids by Weight: 71.5- 77.5% (ASTM D2369)
    - c) Density: 14 lbs/gal (1.67 kg/l) (ASTM D1475)
    - d) Drying Time: 1 – 4 hours at 77°F (25°C) and 40% humidity (ASTM D5895)
    - e) Taber Wear Abrasion Dry (H-10 wheel): 1.0g/1000 cycles after 1-day cure (ASTM D4060)
    - f) Taber Wear Abrasion Wet (H-10 wheel): 4.0g/1000 cycles after 7-day cure (ASTM D4060)
    - g) Water Absorption: 3.5 – 6.5% (ASTM D471)
    - h) Mandrel Bend: 1.0 – 1.5 inch (ASTM D522 - 93A)
    - i) VOC Content: < 50 g/l

**TECHNICAL PROVISIONS**

- j) Friction - Dry: 75 - 95 (ASTM E303)
  - k) Friction - Wet: 55 - 75 (ASTM E303)
  - l) Permeance: 13.4 g/m<sup>2</sup>/24hr/mmHg (52 mils) (ASTM D1653)
- B. Colorant: A highly concentrated, high quality, UV stable pigment blend designed to add color to the specified asphalt pavement coating.
- C. Adhesion Promotor: A liquid agent designed to enhance the adhesion of the specified coating over surfaces with polished aggregates.
- D. Sealer Concentrate: A liquid sealer that is applied to a newly completed project to help seal coating and reduce dirt and tire pick-up.

**24.04 EXECUTION**

## Quality Assurance

- A. Qualifications:
- 1. Manufacturer: Continuously engaged in manufacturing coating of similar type to that specified, with a minimum of five years successful experience.
  - 2. Installer: Shall be a certified applicator by manufacturer.
- B. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.

## Product Delivery Storage and Handling

- A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.
- B. Storage: Store manufactured materials in a clean, dry location, protected from the weather and deterioration, and complying with manufacturer's written instructions for minimum and maximum temperature requirements for storage.

## Project / Site Conditions

- A. Environmental Limitations: Do not install coating over wet or damp substrates
- B. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit coating to be applied according to manufacturer's written instructions.
- C. Permits: Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.

**TECHNICAL PROVISIONS**

- D. Safety: Familiarize every member of the application crew with all safety regulations recommended by OSHA, NIOSH, NRCA and other industry or local governmental groups.

## Warranty

- A. Provide a manufacturer warranty against material defects for a minimum period of three (3) years from the date of completion.

## Substrate Examination / Preparation

- A. General: Ensure that surfaces are free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, release agents, laitance, paint, loose particles/friable matter, rust, de-icing materials, chemical residue or any other material that would be detrimental to adhesion of the coating to the non-textured asphalt pavement surface. Protect areas using masking tape, plastic sheeting, tarps, coating shields, as necessary, to prevent overspray.
- B. Asphalt Pavement Preparation: Thoroughly clean the surface of dust and debris using a broom and/or blower. Power wash areas with heavy dirt/debris build-up and where grease and oil contamination is present using an acceptable biodegradable cleaner. Ensure that the substrate is dry prior to applying the specified coating.
- C. Existing Coatings: Remove pavement markings by sandblasting, pressure-washing, grinding, or other mechanical methods, as approved by the Owner or Owner's representative.
- D. Polished Asphalt Surface Preparation: Where asphalt is older with exposed and polished stone, apply adhesion promoter according to the manufacturer's published guidelines and allow to dry completely prior application of the first layer of coating.

## Coating

## Application

- A. Adhesion Promoter: For older asphalt with polished stone. Mix and apply according to manufacturer's instructions and allow to dry completely prior application of the first layer of coating. If the asphalt substrate is newer without exposed polished stone an adhesive promoter is not needed.
- B. Coating Application: Mix according to manufacturer instructions. Apply three (3) coats at the manufacturer specified rate of application to achieve a nominal dry mil thickness of 19 mils. Rough and/or porous asphalt surfaces may require an additional coat(s) to achieve desired dry mil thickness. Coating shall be applied by a heavy duty textured sprayer and back rolled, or roller, or brush applied according to the requirements

**TECHNICAL PROVISIONS**

published in the manufacturer's installer's guide. Allow each coat of material to dry before applying subsequent layers.

- C. Sealer Concentrate: Mix according to manufacturer instructions and apply two (2) light coats using a low pressure handheld or backpack sprayer over coating application.

**Field Quality Control and Inspections**

- A. Site Condition: Leave all areas around job site free of debris, materials, equipment and related items after completion of job.
- B. Notification of Completion: Notify the Owner and Manufacturer of job completion.
- C. Issuance of the Guarantee: Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified warrantee.

**24.05 MEASUREMENT AND PAYMENT**

The contract unit price paid per square foot for "Street-bond San Diego Buff Color" is the area covered and 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 Street-bond sandstone color as shown in the plans, as specified in the Caltrans Standard Specifications and these Specifications, and as directed by the City Engineer or designee.