# TECHNICAL SPECIFICATIONS

## JOE'S TRAIL AT SARATOGA DE ANZA TRIAL PROJECT (PHASE 1)

## FEDERAL PROJECT ID: CML 5332(012)

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CITY OF SARATOGA DETAILS GENERAL CONSTRUCTION SPECIFICATIONS

PART 1: GENERAL

**13-1.01**

**13-1.02 GENERAL.-**

The Contractor's attention is directed to the tracks and right-of-way of the Union Pacific Railroad Company (UPRR). The right-of-way, which is approximately 90 feet wide, is located immediately to the north of the project site. This portion of the Union Pacific Railroad is part of the Vasona Branch located in the City of Saratoga in Santa Clara County, hereinafter referred to as "Railroad," within the limits of the project.

In accordance with the provisions in Section 7-1.12 (Caltrans Standard Specifications May 2006), "Indemnification and Insurance," of the Standard Specifications, the Contractor shall be responsible for all damages to Railroad's track and equipment operating on such track, resulting from his operations.

The Contractor shall not allow any personnel or equipment on Railroad's tracks or right of way.

The Contractor shall conduct his operation in a manner that will prevent debris or any other material from falling onto the tracks and right of way of the Railroad.

**END OF SECTION 13**

## MITIGATION MEASURES

As part of the environmental review process, the City of Saratoga has agreed to the following mitigation measures, which measures are part of the Work:

**Available for downloading on www.saratoga.ca.us under "Current Projects out to Bid" – "Joe's Trail At Saratoga De Anza Project". :**

1. **Initial Study/Mitigated Negative Declaration** prepared by LSA Associates, Inc., dated April 2007.
2. **Natural Environmental Study** prepared by LSA Associates, Inc., dated February 2008.
3. **Biological Assessment** prepared by LSA Associates, Inc., dated February 2008.
4. **Monitoring Report Program** prepared by LSA Associates, Inc., dated September 2008.

- Aesthetics:
  a. Tree protective fencing shall be installed and established prior to any grading or the arrival of construction equipment or materials on the project site. Fencing shall be installed outside the dripline around all trees that are immediately adjacent to active construction areas and that are shown for project retention on project plans. The fencing shall comprise 6-foot high chain-link fencing mounted on 8-foot tall, 2-inch diameter galvanized posts, driven 24 inches into the ground and spaced no more than 10 feet apart. Once established, the fencing shall remain undisturbed and be maintained throughout the construction process until final inspection.
  b. A preconstruction meeting shall be held with the contractor following installation of protective fencing and prior to start of work to review tree protection measures.
  c. Unless otherwise approved, all construction activities shall be conducted outside the designated fenced area, including the time after fencing is removed. Construction activities include, but are not limited to, demolition, grading, trenching, equipment cleaning, stockpiling and dumping materials (including soil fill), and equipment/vehicle operation and parking.
  d. Any approved grading or trenching beneath tree canopies shall be performed manually using shovels.
  e. Any pruning of trees shall be performed under the supervision of an International Society of Arboriculture (ISA) Certified Arborist and according to ISA standards.

f. The disposal of harmful products (such as chemicals, oil, and gasoline) shall be prohibited beneath tree canopies or anywhere on the site where drainage occurs beneath tree canopies. In addition, fuel shall not be stored and refueling or maintenance of equipment shall not occur within 20 feet of a tree trunk.
g. Herbicides and pesticides shall not be applied beneath tree canopies as part of the proposed project. Where used on the site, herbicides shall be labeled for safe use near trees.

- Air Quality:
  a. Water all active construction sites at least twice daily.
  b. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.
  c. Apply water three times daily or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
  d. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
  e. Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
  f. Hydroseed or apply non-toxic soil stabilizers to inactive construction areas (previously disturbed areas inactive for ten days or more).
  g. Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.)
  h. Limit traffic speeds on unpaved roads to 15 miles per hour.
  i. Install sandbags or other erosion control measures to prevent silt runoff to public roadways. .
  j. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour.
  k. Minimize idling time (to 5 minutes or less).
  l. Maintain properly-tuned equipment.

- Biological Resources:
  a. Pre-construction surveys as determined in **Monitoring Report Program** prepared by LSA Associates, Inc., dated September 2008.
  b. If feasible, all vegetation removal activities shall be conducted during the non-breeding season (i.e., September through February) to avoid direct impacts to nesting birds. If such work must be scheduled during the breeding season (March through August), a qualified ornithologist shall conduct a pre-construction survey of the work area to determine if any birds are nesting in or in the vicinity of vegetation to be removed. The pre-construction survey shall be conducted within 15 days prior to the start of work from March to May (since there is higher potential for birds to initiate nesting during this period), and within 30 days prior to the start of work from June to August. If active nests are found in the work area, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer shall be determined by the biologist in consultation with the California Department of Fish and Game

(CDFG), and shall be based to a large extent on the nesting species and its sensitivity to disturbance.

- Cultural Resources:
  a. If deposits of prehistoric or historical archaeological materials are encountered during project construction activities, all work within 25 feet of the discovery shall be redirected and a qualified archaeologist shall be contacted to assess the finds and make recommendations. If such deposits cannot be avoided, they shall be evaluated for California Register of Historical Resources eligibility. If the deposits are not eligible, avoidance is not necessary. If the deposits are eligible, they shall be avoided by project construction activities, or such effects shall be mitigated to a less-than-significant level through data recovery (by capturing scientific information after developing an appropriate research design). Upon completion of the archaeological assessment, the archaeologist shall prepare a report documenting methods and results of the assessment, and shall provide recommendations for the treatment of archaeological materials discovered. The report shall be submitted to the City of Saratoga and the Northwest Information Center.
  b. A paleontologist shall monitor initial project ground disturbing activities at or below 5 feet from the original ground surface (i.e., at or below the average project soil and fill depth). After the initial monitoring, the paleontologist can then determine if further monitoring or periodic site reviews for paleontological resources would be appropriate. Paleontological monitors shall be empowered to halt construction activities at the location of a discovery to review the possible paleontological material and to protect the resource while it is being evaluated. Monitoring shall continue until, in the paleontologist's judgment, paleontological resources are not likely to be discovered.

  c. If paleontological resources are discovered during project activities (with or without a monitor present), all work within 25 feet of the discovery should be redirected until a paleontological monitor has assessed the situation, consulted with agencies as appropriate, and made recommendations for the treatment of the discovery. Adverse effects to paleontological resources shall be avoided by project activities. If avoidance is not feasible, the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, adverse effects on the resources shall be avoided, or such effects shall be mitigated (through data recovery).
  d. If human remains are encountered, work within 25 feet of the discovery shall be redirected and the County Coroner notified immediately. At the same time, an archaeologist shall be contacted to assess the situation. Project personnel shall not collect or move any human remains or associated materials. If the human remains are of Native American origin, the Coroner shall notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist shall prepare a report documenting the methods and results of the assessment, and provide

recommendations for the treatment of the human remains and any associated cultural materials, as appropriate and in coordination with the recommendations of the MLD. The report shall be submitted to the City of Saratoga and the Northwest Information Center.

- Hydrology and Water Quality:
  a. The final project design shall incorporate design, control, and engineered treatment measures to reduce polluted storm water runoff from the site to a less-than-significant level. These measures shall include the use and maintenance of best management practices (BMPs) for site design and storm water treatment, and shall be designed in accordance with approved numeric sizing criteria and guidelines put forth by the Santa Clara Valley Urban Runoff Pollution Prevention Program and the California Stormwater Quality Association. The final project design plans shall also specify how proposed BMPs will be maintained.

- Noise:
  a. In accordance with Article 7-30-060(a) of the Saratoga Noise Ordinance, construction activities (including earthmoving and grading) within the project site shall be conducted only between the hours of 7:30 a.m. and 6:00 p.m. Monday through Friday, and between the hours of 9:00 a.m. and 5:00 p.m. on Saturday. Construction shall not occur on Sundays or weekday holidays.
  b. A notice of these construction hour restrictions shall be conspicuously posted at the entrance to the work site prior to commencement of the work informing all contractors and subcontractors, their employees, agents, material suppliers and all other persons at the property of the basic limitations upon noise and construction activities provided in the City's Municipal Code.
  c. During construction, all construction equipment powered by internal combustion engines shall be properly muffled and maintained.
  d. Unnecessary idling of internal combustion engines shall be prohibited.
  e. All stationary noise-generating equipment, such as air compressors, shall be located as far as practical from residences in the vicinity of the project site. Such equipment shall be acoustically shielded using standard plywood barriers, noise control blankets, or other appropriate equipment.
  f. Whenever feasible, quiet construction equipment, particularly air compressors, shall be utilized.

Contractor shall comply with all mitigation measures and shall complete the mitigation measures to the satisfaction of all agencies with jurisdiction.

END OF SECTION 14

## SECTION 15 TRAFFIC STRIPES, PARKING STALLS AND PAVEMENT MARKINGS

PART 1: GENERAL

1.1 DESCRIPTION: The work of this section consist of installing traffic stripes, parking stalls and pavement markings.

A. Cleaning: Sweep and clean surface to eliminate loose material and dust.

B. Remove existing parking stall painting by sand blasting.

C. Striping: Thermoplastic and Paint Type, per Section 84 of the Caltrans Standard Specifications for Construction of Local Streets and Roads, May 2006 Edition

D. Do not apply traffic and lane marking paint until layout and placement have been verified with Engineer.

E. Apply paint with mechanical equipment to produce uniform straight edges. Apply at manufacturer's recommended rates to provide minimum 12 to 15 mils dry thickness. Use white color for normal striping, unless otherwise noted. Use blue color at handicap facilities.

END OF SECTION 15

## SECTION 16 SPLIT RAIL FENCE (GRAPE STAKE FENCE)

PART 1: GENERAL

1.1 DESCRIPTION: The work of this section consist of installing Split Rail Fence (Grape Stake). Material shall be Cedar as specified in plan detail sheet.

1. Split Rail Fence(Grape Stake Fence) (ln ft): Install Split Rail Fence (Grape Stake Fence) as specified in Plans. See sample picture below:

Split Rail Fence (Grape Stake Fence)

END OF SECTION 16

## SECTION 17 CONCRETE PARKING BUMPERS

PART 1: GENERAL

1.1 DESCRIPTION: The work of this section consist of installing concrete bumpers and specification of item.

Parking concrete bumpers (stops) shall be in 4' in length. Holes are placed at each end of the piece so that a ½" rebar can be inserted for anchoring to asphalt or concrete surfaces. The center of the bottom of the piece is raised slightly to allow for water drainage.

Finish: Block texture

Dimension size:

| Length | Width | Height |
|---|---|---|
| 3' | 7 5/8" | 5" |

Specification: 3,500 P.S.I concrete. Reinforcement shall consist of two #3 deformed steel bars.

1.2 SUBMITTALS: As indicated in SECTION 01300 SUBMITALS

END OF SECTION 17

## SECTION 18 SIGNS

### PART 1 - GENERAL

### 1.1 SUMMARY

1. A. This Section includes material and installation requirements for placement of signs. Reference to Section 56 SIGNS of the Caltrans Standard Specifications for Construction of Local Streets and Roads, May 2006 Edition.

2. Mounting:

   - Roadside signs will be ground mounted on steel 2"X2" powder coated brown perforated posts with anchors as described in section 56-2.02A Metal Post.

   - Pathway signs along the trail will be ground mounted on steel 2"X2" powder coated brown perforated posts with anchors as described in section 56-2.02A Metal Post.

END OF SECTION 18

## SECTION 19 MOBILIZATION

### PART 1: GENERAL

1.1 DESCRIPTION: Mobilization shall conform to the provisions of Section 11, "Mobilization", of Caltrans Standard Specifications 2006.

Payment for compliance with this section shall be deemed included in the various other items of work, and no additional compensation will be allowed therefore.

END OF SECTION 19

## SECTION 20 TEMPORARY CONSTRUCTION ENTRANCE

1.1 DESCRIPTION: TEMPORARY CONSTRUCTION ENTRANCE shall conform to the Caltrans Standard Specifications 2006 TEMPORARY CONSTRUCTION ENTRANCE Type 2 (see attached detail in Appendix A Construction Details)

END OF SECTION 20

## SECTION 21 STORM WATER POLLUTION PREVENTION

1.1 DESCRIPTION: **STORM WATER POLLUTION PREVENTION:** To control erosion during and after project implementation, the contractor shall implement a Stormwater Pollution Prvention Plan (SWPPP) with appropriate Best Management Practices (BMPs), in accordance with San Francisco Bay Regional Water Quality Board (RWQCB) guidelines

**Section 21 Storm Water Pollution Prevention.** - Storm Water Pollution Prevention will be applicable to any construction activity that involves **one acre or more of Total Area to be Disturbed.** For projects involving linear construction (such as installation of sewer pipeline and conduits), the following formula may be used to calculate the total area to be disturbed including the trenching activity:
Total Area to be Disturbed = [(A + B) x C] + D + E
A = *Width of disturbance (including trench width)*
B = *Immediate access width*
C = *Length of pipe diameter*
D = *Areas of project-related activity (such as equipment and material storage) occur*
E = *Number of bore holes x (Bore hole diameter + 'B')*

**21-2.01 Plan Preparation and Compliance.** – The Contractor shall conform to Section 7-1.01 G, "Water Pollution," of Caltrans Standard Specifications and these Special Provisions.

Within thirty (30) calendar days after execution of the contract, the Contractor shall submit a Storm Water Pollution Prevention Plan (SWPPP) and a draft of the Notice of Intent (NOI) to be filed by the City with the California State Water Resources Control Board (SWRCB). The annual permit fee(s) shall be paid by the City.

The SWPPP shall conform to Provisions in Section 7-1.01G, "Water Pollution," of the Standard Specifications, the details, operating procedures, and maintenance guidelines of the California Regional Water Quality Control Board San Francisco Bay Region's "Guidelines for Construction Projects" (Guidelines), the California Regional Water Control Board San Francisco Bay Region's "Erosion and Sediment Control Field Manual" (Manual), the project plans and these SpecialProvisions. Upon the Engineer's review and acceptance of the SWPPP, the SWPPP

shall be deemed to fulfill the requirements set forth in Section 7-1.01G of the Standard Specifications for development and submittal of a Water Pollution Control Program.

The Notice to Proceed may be withheld until the Engineer has reviewed and accepted the SWPPP, the State Notice of Intent has been filed, and a NOI receipt letter is received from the SWRCB authorizing coverage of this project under the Construction Activity General Permit.

**21-2.02 Construction Requirements.** – The Contractor shall implement and maintain the SWPPP for the project in full compliance with the revised state regulations to control the discharge of storm water pollutants. The Contractor shall provide the monitoring or reporting required to comply with all the state regulations regarding the SWPPP for the project.

**21-2.02A Storm Water Pollution Prevention Plan.** – The SWPPP shall identify construction activities that may adversely affect the quality of storm water discharges associated with the project and shall identify water pollution control measures, hereinafter referred to as control measures, to be constructed, implemented, and maintained in order to reduce, to the maximum extent feasible, storm water discharges from the construction site both during and after construction is completed under this contract.

The Contractor shall amend the SWPPP, graphically and in narrative form, whenever there is a change in construction activities or operations which may affect the discharge of significant quantities of pollutants to surface waters, ground waters, municipal storm drain systems or when deemed necessary by the Engineer. The SWPPP shall be amended if, at any time, the implementation of the SWPPP is not effectively achieving the objective of maximum feasible reduction of pollutants in storm water discharges. Amendments shall show additional control measures or revised operations, including those in areas not shown in the initial SWPPP, which are required on the project to control water pollution effectively. Amendments to the SWPPP shall be dated and logged in the SWPPP and submitted to the Engineer within five (5) working days. Upon the Engineer's review and acceptance of the amendment, the Contractor shall implement the additional control measures or revised operations. In emergency situations that require immediate changes at the project site, the Contractor shall implement the necessary measures and notify the Engineer of the changes.

The Contractor shall give immediate notice to the Engineer of any planned changes in construction activity that may result in non-compliance with these Special Provisions.

By the last day of each month, the Contractor shall submit an affidavit to the Engineer certifying conformance with the SWPPP. The monthly partial payment may be withheld if the affidavit is not received and accepted by the Engineer. If at any time the project is in non-compliance with the SWPPP, the Contractor shall

submit a written report to the Engineer within two (2) days of identifying the noncompliance. The report shall specify the time and nature of the non-compliance and include a course of action to correct the deficiency.

The Contractor shall keep a copy of the State of California Construction Activity General Permit (SWRCB Order No. 99-08-DWQ), the SWPPP, and any approved amendments at the project site. The SWPPP shall be made available upon request of any representative of the Regional Water Quality Control Board, State Water Resources Control Board, United States Environmental Protection Agency, or any City representative. Public requests for copies of the SWPPP shall be directed to the Engineer.

**21-2.02B Erosion and Sediment Control. –** The facilities shown on the SWPPP are designed to control erosion and sediment during the Rainy Season, from October 15 to April 15. Facilities are to be operable prior to October 1 of each year (hereinafter "Rainy Season"). During the Non-Rainy Season, from April 16 to October 14 (hereinafter "Non-Rainy Season"), the Contractor shall use effective Best Management Practices (BMPs) at the project site.

(1) Construction operations shall be carried out in such a manner that erosion and water pollution will be minimized. Contractor shall comply with state and local laws concerning pollution abatement.
(2) Contractor shall be responsible for monitoring erosion and sediment control measures prior, during, and after storm events.
(3) Reasonable care shall be taken when hauling any earth, sand, gravel, stone, debris, paper, or any other substance over any public street, alley or other public place. Should any material blow, spill, or track over and upon said public or adjacent private property, immediate remedy shall occur.
(4) Inlet protection shall be installed at open inlets to prevent sediment from entering the storm drain system. Inlets not used in conjunction with erosion control are to be blocked to prevent entry of sediment.
(5) During the Rainy Season, all paved areas shall be kept clear of earth material and debris. The site shall be maintained so as to minimize sediment-laden runoff to any storm drainage system, including existing drainage swales and watercourses.
(6) Contractor shall install and maintain construction entrances prior to commencement of grading. All construction vehicle traffic entering onto the paved roads must cross stabilized construction entrance ways. Entrance ways may be constructed of two-inch to six-inch drain rock, metal grating, or metal cattle-guard, or equivalent material, or may include vehicle wash stations as needed, in sufficient quantity and

size to prevent tracking of mud and debris from the construction site. Any mud or debris tracked onto public streets, or onto adjacent public or private property, shall be removed immediately as required by the City.

(7) Grading operations during the Rainy Season which leave denuded slopes shall be protected with erosion control measures immediately following grading on the slopes. If hydroseeding is not used or is not effective by October 10, then other immediate methods shall be implemented, such as erosion control blankets, blown straw, or a three-step application of 1) seed, mulch, fertilizer, 2) blown straw, and 3) tackifier and mulch.

(8) Sanitary facilities shall be maintained on the site in a manner to prevent inadvertent discharge or leakage of sanitary wastes into the storm drain system either by placing sanitary facilities in locations that do not drain to the storm drain system or by providing secondary containment systems to capture leaked wastes.

(9) Contractor shall provide dust control as required by the appropriate federal, state and City requirements and Section 10, "Dust Control," of Caltrans Standard Specifications.

The erosion and sediment control plan may not cover all the situations that may arise during construction due to unanticipated field conditions. Variations and additions may be made to the plan in the field. Notify the City Representative of any field changes.

**21-2.03 Maintenance.** – The SWPPP shall include a plan for maintenance that shall include at a minimum:

(A) Immediate repair of damage caused by soil erosion or construction.

(B) Inspection of sediment traps, berms, rills, gullies, and swales after each storm event and repair or cleaning as needed.

(C) Removal of sediment from sediment traps and restoration to original dimensions when sediment has accumulated to a depth of one foot. Sediment removed from trap shall be deposited in a suitable area and in such a manner that it will not erode.

(D) Regular cleaning of gravel bag inlet protection so that sediment depth never exceeds a maximum of three inches.

**21-2.04 Payment.** – Payments for Storm Water Pollution Prevention will be made as follows:

(A) When the monthly partial payment estimate of the amount earned, not including the amount earned for Storm Water

Pollution Prevention, is 5 percent or more of the original contract amount, 20 percent of the contract item price for Storm Water Pollution Prevention will be included in said estimate for payment.

(B) When the monthly partial payment estimate of the amount earned, not including the amount earned for Storm Water Pollution Prevention, is 10 percent or more of the original contract amount, 30 percent of the contract item price for Storm Water Pollution Prevention less all previous payments will be included in said estimate for payment.

(C) When the monthly partial payment estimate of the amount earned, not including the amount earned for Storm Water Pollution, is 20 percent or more of the original contract amount, 40 percent of the contract item price for Storm Water Pollution Prevention less all previous payments will be included in said estimate for payment.

(D) When the monthly partial payment estimate of the amount earned, not including the amount earned for Storm Water Pollution Prevention, is 50 percent or more of the original contract amount, 60 percent of the contract item price for Storm Water Pollution less all previous payments will be included in said estimate for payment.

(E) When the monthly partial payment estimate of the amount earned, not including the amount earned for Storm Water Pollution Prevention, is 90 percent or more of the original contract amount, 90 percent of the contract item price for Storm Water Pollution Prevention less all previous payments will be included in said estimate for payment.

(F) After acceptance of the contract pursuant to Section 7-1.17, "Acceptance of Contract," the amount, if any, of the contract item price for Storm Water Pollution Prevention in excess of 10 percent of the original contract amount will be included for payment in the first estimate made in accordance with said Section 9-1.07.

The contract lump sum price paid for Storm Water Pollution Prevention shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in Storm Water Pollution Prevention as specified herein. Measurement and payment shall be as specified in the project's Technical Specifications.

The City will not pay for erosion and sediment control items that are required due to the Contractor's negligence, carelessness, failure to properly install controls, or failure to abide by the provisions of the SWPPP, the Standard Specifications and these Special Provisions. The Contractor shall install such work at no expense to the City.

All penalties from regulatory agencies attributable to the Contractor as a result of the Contractor's negligence, carelessness, failure to properly install controls, or failure to

abide by the provisions of the SWPPP, the Standard Specifications and these Special Provisions shall be paid at Contractor's sole expense.

If the contract is extended to the next Rainy Season due to unanticipated field conditions and not due to Contractor's fault, payments will be made under a revocable item. Measurement and payment shall be as specified in the project's Technical Specifications.

END OF SECTION 21

## SECTION 22 TEMPORARY EROSION AND SEDIMENT CONTROL

**22-1.01 Temporary Erosion and Sediment Control.** – Temporary erosion and sediment control within the total project shall conform to the Provisions in Section 20-5, "Erosion Control," of the Standard Specifications, these Special Provisions and the Plans. The Contractor's attention is directed to Section 21, "Storm Water Pollution Prevention," of these Special Provisions.

Temporary erosion and sediment control work shall consist of applying erosion control materials to embankment slopes, excavation slopes and other areas designated on the plans, installing silt fence, inlet protection, gravel bags, headwall protection and stabilized construction entrance ways.

**22-1.02 Measurement and Payment.** – Full compensation for "Temporary Erosion and Sediment Control" shall be considered as included in the contract lump sum price for Storm Water Pollution Prevention (Section 10-2 of these Special Provisions) and no separate payment shall be made therefore.

END OF SECTION 22

## SECTION 01170 ACCIDENT PREVENTION

PART 1: GENERAL

1.1 DESCRIPTION: The work of this section consist of establishing an effective accident prevention program and providing a safe environment for all the public and workers within the construction zone.

1.2 SUBMITTALS:

A. Accident Prevention Program: Before on-site work begins, submit for review and comment an accident prevention program. The Engineer will review the proposed program for compliance with OSHA and project requirements. If the program requires any revisions or corrections, the Contractor shall resubmit the program within 10 days. No progress payments will be processed until the program is approved. The program shall include:

1. Name of responsible supervisor to carry out the program.

2. Weekly and monthly safety meetings.

3. First aid procedures

4. Outline of each phase of the work, the hazards associated with each major phase, and the methods proposed to ensure property protection and safety of the public, and Contractor's employees. Identify the work included under each phase by reference to specification section or division numbers

5. Training, both initial and continuing.

6. Planning for possible emergency situations, such as floods, fires, cave-ins, slides, explosions, power outages, and wind storms. Such planning shall take into consideration the nature of construction, site conditions, and degree of exposure of persons and property.

7. Housekeeping

8. Fire Protection

B Certificates: Certify that all mechanical equipment has been inspected and meets OSHA requirements.

C. Submit a copy of test reports, as required by OSHA, for personnel working with hazardous materials.

D. Submit a report of safety meetings and of inspections.

E. Upon request, submit proof of employees' qualifications to perform assigned duties in a safe manner.

F. Confined Space Training Certification

1.3 QUALITY ASSURANCE:

A. Clauses entitled "Accident Prevention" and "Permits and Responsibilities" of the General Provisions. In case of conflicts between Federal, state, and local safety and health requirements, the most stringent shall apply. Equipment or tools not meeting OSHA requirements will not be allowed on the project sites. Failure to comply with the requirements of this section and related sections may result in suspension of work.

B. Qualification of Employees:

1. Ensure that employees are physically qualified to perform their assigned duties in a safe manner.

2. Do not allow employees to work whose ability or alertness is impaired because of drugs, fatigue, illness, intoxication, or other conditions that may expose themselves or others to injury.

3. Operators of vehicles, mobile equipment, hoisting equipment, and hazardous plant equipment shall be able to understand signs, signals, and operating instructions, and be capable of operating such equipment. Provide operating instructions for all equipment. Newly hired operators shall be individually tested by an experienced operator or supervisor to determine if they are capable of safely operating equipment.

1.4 ACCIDENT REPORTING:

A. Reportable Accidents: A reportable accident is defined as death, occupational disease, traumatic injury to employees or the public, property damage by accident in excess of $100, and fires. Notify the City and appropriate regulatory agencies within 24 hours of the reportable accident.

B. All other Accidents: The Contractor shall report all other accidents to the City and appropriate regulatory agencies as soon as possible and assist the City and other officials as required in the investigation of the accident.

PART 2: PRODUCTS

2.1 FIRST AID FACILITIES: Provide adequate facilities for the number of employees and the type of construction at the site.

2.2 PERSONNEL PROTECTIVE EQUIPMENT: Meet requirements of NIOSH and MSHA, where applicable, as well as ANSI.

2.3 BARRIERS: Section 01530.

## *PART 3: EXECUTION*

3.1 EMERGENCY INSTRUCTIONS: Post telephone numbers and reporting instructions for ambulance, physician, hospital, fire department, and police in conspicuous locations at the work site.

3.2 ESCAPE ROUTES: Provide and maintain adequate escape routes at all times in accordance with the Life Safety Code (NFPA 101-85). No corridor, aisle, stairway, door, or exit shall be obstructed or used in a manner that interfered with escape routes.

3.3 PROTECTIVE EQUIPMENT:

A. Inspect personal protective equipment daily and maintain in a serviceable condition. Clean, sanitize, and repair, as appropriate, personal items before issuing them to another individual.

B. Inspect and maintain other protective equipment and devices before use and on a periodic basis to ensure safe operation.

3.4 SAFETY MEETINGS:

A. As a minimum, conduct weekly 15-minute "toolbox" safety meetings. These meetings shall be conducted by a foreman and attended by all construction personnel at the worksite.

B. Conduct monthly safety meetings for all levels of supervision. Notify the Contracting Officer so that he may attend. These meetings shall be used to review the effectiveness of the Contractor's safety effort, to resolve current health and safety problems, to provide a forum for planning safe construction activities, and for updating the accident prevention program. The Contracting Officer will enter the results of the meetings into his daily log.

3.5 HARD HATS AND PROTECTIVE EQUIPMENT AREAS:

A. A hard hat areas shall be designated and posted by the Contractor in a manner satisfactory to the City.

B. It is the Contractor's responsibility to require all those working on or visiting the site to wear hard hats and other necessary protective equipment at all times. As a minimum, provide six hard hats for use by visitors. Change liners before reissuing hats.

C. The contractor shall provide barricades and warning signs, or other warning devices as necessary prevent unauthorized access into the construction work area.

3.6 TRAINING:

A. First Aid: Provide adequate training to ensure prompt and efficient first aid.

B. Hazardous Material: Train and instruct each employee exposed to hazardous material in safe and approved methods of handling and storage. Hazardous materials are defined as explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful substances that could cause death or injury.

C. OSHA Confined Space Training: The Contractor shall be required to submit their written policy for confined space entry. The policy shall include a copy of the permit used by the Contractor and identification of their safety/confined space entry equipment

END OF SECTION 01170

## SECTION 01200 PROJECT MEETINGS

PART 1: GENERAL

1.1 PRECONSTRUCTION CONFERENCE: Before start of construction, the Contractor shall arrange an on-site pre-construction meeting with City of Saratoga.

1.2 PROGRESS MEETINGS:

A. The City will require, as a minimum, the Contractor to conduit weekly meetings with appropriate subcontractors, utility companies as required, and the Engineer and staff. The city reserves the right to require progress meeting on a more frequent basis during crucial periods of the project which require extra coordination efforts.

B. The Contractor shall be required to update his project schedule prior to the weekly progress meetings. The schedule shall include, as a minimum, activity ID numbers, task descriptions, task duration's, start and finish dates, identification of Critical Path tasks, % complete for each activity, total estimated cost for each activity, and float or slack time. The Contractor shall provide ten copies to the City prior to the Status meeting.

C. The Engineer will take meeting minutes for each meeting and assign actions accordingly. Meeting minutes will include action assignments to specific personnel and a completion date.

PART 2: PRODUCTS Not used.

PART 3: EXECUTION Not used.

END OF SECTION 01200

# SECTION 01300 SUBMITTALS

## PART 1: GENERAL

1.1 DESCRIPTION: The work of this section consists of submittal requirements before and during construction.

1.2 RELATED REQUIREMENTS: Closeout submittals - Section 01700.

1.3 SCHEDULES: As soon as possible after Notice of Award and before beginning any work, submit Progress Schedule and Schedule of Values as a package. The City will review the Progress Schedule and the Schedule of Values for format and content.

A. Progress Schedule: Submit to the Engineer for approval, four copies of a Critical Path Method Progress Schedule (normally in bar chart form) showing estimated starting and completion dates for each part of the work. The Critical Path method schedule shall be prepared using computer scheduling programs such as Primavera, Microsoft Project, Suretrak, P3, or others. The progress payment will not be approved by the City until an acceptable, up to date progress schedule is provided to the Engineer. The purpose of the schedule will be to assure adequate planning and execution of the work by the Contractor; to assure coordination of the work of the various subcontractors and utility companies; to assist the contractor, City and Engineer in monitoring the progress of the work and evaluating proposed changes to the contract and schedule; to assist the Engineer, City, and Contractor in the preparation and evaluation of the Contractor's monthly progress payments; and to alert the City as to the proposed closure of streets and other public facilities.

B. Schedule of Values: Submit a schedule values for the dollar values based on the Contract Bid Schedule including all bid items, and for the work activities identified in the project schedule. Break down into component parts each bid item involving a series of operations for which progress payments may be requested. The total costs for the component parts shall equal the bid amount for that item, and the total cost of all items shall equal the contract sum. The City may request additional tasks be identified in the schedule of values or data to verify accuracy of dollar values. The Schedule of Values will form the basis for progress payments as provided for in the General Provisions.

1.4 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES:

A. General Procedures:

1. As specified in the individual sections, forward submittals to the City at least 15 days before need for review. Unless a different number is specified, submit five copies of each shop drawing, three specimens of each sample, and five copies of all other submittals requested, all of which will be retained by the City. Submit any additional copies that are to be returned.

2. Coordinate all submittals and review them for legibility, accuracy, completeness, and compliance with contract requirements. Forward submittals that are related to or affect one another as a package to facilitate coordinated review.

3. Submittals will not be accepted for review if they are not on the correct form, an incorrect amount of submittals are submitted, the transmittal form is incorrectly filled out, submittals are not coordinated, or submittals do not show evidence of Contractor's approval.

4. The City reserves the right to require submittals in addition to those called for in individual sections.

B. Specific Procedures:

1. Shop Drawings: Identify each copy of shop drawings with contract drawing number in lower right hand corner.

2. Samples: Samples shall be large enough to illustrate clearly the functional characteristics and full range of color, texture, or pattern.

3. Manufacturers' Literature: Submit only pertinent pages; mark each copy of standard printed data to identify products referenced in specification section.

C. The City's Review:

1. After approving submittals, The City will return Contractor's copies.

2. If submittals are not approved, The City will return all copies to Contractor with reasons for rejection. Resubmit, identifying changes.

3. Any work done before approval shall be at Contractor's own risk.

1.5 APPROVED EQUALS:

A. For each item proposed as an "approved equal," submit a separate request. With each request submit supporting data, including:

1. Drawings and samples as appropriate.

2. Comparison of the qualities of the proposed item with that specified.

3. Changes required in other elements of the work because of the substitution.

4. Name, address, and telephone number of vendor.

5. Manufacturer's literature regarding installation, operation, and maintenance, including schematics for electrical and hydraulic systems, lubrication requirements, and parts list. Describe availability of maintenance service, and state source of replacement materials.

B. A request for approval constitutes a representation that Contractor:

1. Has investigated the proposed item and determined that it is equal or superior in all respects to that specified.

2. Will provide the same warranties for the proposed item as for the item specified.

3. Has determined that the proposed item is compatible with interfacing items.

4. Will coordinate the installation of an approved item and make all changes required in other elements of the work because of the substitution.

5. Waives all claims for additional expenses that may be incurred as a result of the substitution.

C. The Engineer has the final determination as to whether the proposed substitute product is equal. If the determination is made the product is not equal, the contractor shall be required to provide a product which meets the specifications.

1.6 MANUFACTURER'S INSTALLATION INSTRUCTIONS: When contract documents require compliance with manufacturer's printed instructions, provide one complete set of instructions for The City and keep another complete set of instructions at the project site until substantial completion.

1.7 MATERIAL SUBMITTAL LIST- The names of the manufactures/producers of the materials proposed by the Contractor for use under this contract shall be submitted to the Engineer, for review, within (30) calender days after the award of the contract prior to beginning work. The manufacture's producers specifications and or certificates of compliance shall be submitted for all applicable products on the list.

**ITEM DESCRIPTION**

- Construction Schedule
- Storm Water Pollution Prevention Plan
- Material Submittal List
- Site Inspection photo/pictures
- Notices to Residents, Businesses and Schools
- Traffic Control Plan
- Class 2 Aggregate Base
- Asphalt Concrete (Caltrans) Type B Medium ½ inch maximum aggregate size, medium graded. Recycle Asphalt Product (RAP) will not be accepted
- Redwood Split Rail Fence (Grape Stake)
- Decomposed Granite (Gold Fines)
- Class B Portland Cement Concrete (5 sack mix with 1 pint lampblack /cubic yard
- Truncated Domes for Wheelchair Ramp (Color Armor Title Dark Grey Federal Color No. 36118
- Concrete Parking Bumper
- Fill granular material
- Structural concrete
- Thermoplastic stripping
- Bollards
- Signs
- Hydroseed
- Foundation drainage system (bridge)
- Reinforcing steel
- Shop drawings bridges
- Shop drawings trash rack

**END OF SECTION 01300**

## SECTION 01530 TRAFFIC CONTROL/BARRIERS

PART 1: GENERAL

1.1 DESCRIPTION: The work of this section consists of furnishing, installing, and maintaining barriers to protect existing facilities and the public from construction operations. Per Section 7-1.08, "Public Convenience," and 7-1.09, "Public Safety", of the Caltrans Standard Specifications for Construction of Local Streets and Roads, May 2006 Edition Caltrans, set forth the Contractor's responsibilities for public convenience and public safety.

Include "OVERHEAD LINES ABOVE" caution signs through out project limits as part of bid item #3.

1.2 SUBMITTALS

A. A copy of the Traffic Control Supervisor's Certification

B. Traffic Control Plan

PART 2: PRODUCTS

2.1. GENERAL: Material may be new or used, but shall be suitable for intended purpose. Fences and barriers shall be structurally adequate and neat in appearance.

2.2. FENCING: Chain link, 2-inch mesh, minimum height, 6 feet.

2.3. BARRICADES AND SIGNS: ANSI D6.1-78, "Manual on Uniform Traffic Control Devices" (MUTCD), Part VI.

2.4. LUMBER: Free of nails, large knot holes and splinters.

2.5. BARRIER TAPE: Banner Guard, imprinted with "CAUTION: CONSTRUCTION AREA", or approved equal.

2.6. FLASHING ARROW SIGNS: Per section 12-3.03 of the Caltrans Standard Specifications for Construction of Local Streets and Roads, May 2006 Edition Caltrans. Provide electric arrow board(s) for lane reduction.

2.7. SIGNS: Overhead Lines Above

PART 3: EXECUTION

3.1 GENERAL

A. The Contractor shall provide all barricades, flagmen, control devices, etc. necessary to control traffic and protect areas under construction. All traffic control procedures, signing, lighting, barricading, etc., shall conform to the latest edition of the Manual of Uniform Traffic Control Devises.

B. The Contractor shall submit to the City for approval, a Traffic Control Plan (TCP) prepared by a Certified Traffic Control Supervisor. No demolition or construction activities may commence until the TCP has been approved.

C. The Traffic Control Supervisor shall be certified as a Worksite Traffic Supervisor by the American Traffic Safety Services Association (ATSSA).

D. All barricading and signage shall be left in place until the work has been constructed, inspected and approved by the City.

E. The Contractor shall provide the name, address, and phone number of his representative who may be reached at any time during the life of the project regarding repairs, detours, barricading, etc. This information shall be furnished in writing to the City, Fire Department, and Police Department.

F. The Contractor shall be responsible for informing the public of the traffic conditions existing within the construction area at all times by placement of appropriate warning and advisory signs. The Contractor shall provide and maintain all traffic control and safety items. The Contractor assumes sole and complete responsibility for the job and site conditions including safety of all persons and property, from start until final acceptance of construction of construction. This requirement shall apply continuously twenty-four (24) hours/day and shall be limited to normal work hours.

G. Notify the police and fire department 24 hours prior to any road closure.

3.2 PROTECTION OF PUBLIC:

A. Fence, barricade, or otherwise block off the immediate work area to prevent unauthorized entry to the work area.

B. Erect and maintain barricades, lights, danger signals, and warning signs in accordance with ANSI D6.1-78.

C. Illuminate barricades and obstructions at night; keep safety lights burning from sunset to sunrise.

D. Adequately barricade and post open cuts in or adjacent to thoroughfares.

E. Protect pedestrian traffic by guardrails or fences.

F. When pedestrian traffic is detoured into a roadway, provide temporary walkways with any necessary protection at ends and overhead. For walkways, use lumber running parallel to direction of traffic movement and provide ramps at changes of elevation.

G. Cover pipes, hoses, and power lines crossing sidewalks and walkways with troughs using beveled edge boards.

H. Erect and maintain sufficient detour signs at road closures and along detour routes.

3.3 BARRIER TAPE: Install where directed by the City. Keep a minimum of two rolls on site at all times.

3.4 REMOVAL: Completely remove barriers no longer needed and when approved by the City.

END OF SECTION 1530

## SECTION 01560 TEMPORARY CONTROLS

## PART 1: GENERAL

1.1 DESCRIPTION: The work of this section consists of providing temporary controls and disposal of construction wastes and debris. The Contractor shall pay for all disposal costs unless otherwise indicated in the Contract Documents.

1.2 SUBMITTALS:

A. Location and Operator of the Contractor's Solid Waste Disposal Facility to be utilized for construction all materials disposed of off the project site.

## PART 2: PRODUCTS Not used.

## PART 3: EXECUTION

3.1 HOUSEKEEPING:

A. Keep project neat, orderly, and in a safe condition at all times.

B. Provide enough refuse containers for collecting construction debris. Refuge containers shall be emptied as required to maintain a neat and orderly environment.

C. Wet down dry materials and rubbish to prevent blowing dust.

D. Keep volatile wastes in covered containers.

E. Utilize or remove excavated material as soon as possible.

3.2 DISPOSAL:

Soil Evaluation: All soil materials excavated within the project area will be evaluated upon removal. Soil materials will be visually screened for debris and staining by the Engineer. The Contractor shall separate out all trash and debris for soils to be reused onsite.

All trash and debris encountered during excavation shall be stored separately or disposed of at a lawfully permitted landfill facility.

Unless otherwise specified, all removed materials becomes the property of the Contractor and shall be properly disposed of offsite. Immediately remove hazardous rubbish from project site. Place other construction debris in refuse containers at least daily. Dispose of refuse at least weekly, in a legal manner, at approved public or private dumping areas.

3.3 ITEMS IDENTIFIED TO BE REMOVED OR SALVAGED

A. All items identified to be removed or salvaged shall be removed in a manner to minimize damage to the item to be salvaged.

3.4 AIR AND WATER POLLUTION CONTROL:

3 Take all necessary reasonable measures to reduce air and water pollution by any material or equipment used during construction.

4 To control erosion during and after project implementation, the contractor shall implement a Stormwater Pollution Prvention Plan (SWPPP) with appropriate Best Management Practices (BMPs), in accordance with San Francisco Bay Regional Water Quality Board (RWQCB) guidelines

5 Do not dispose of any volatile wastes or oils in storm or sanitary drains.

6 Do not allow waste materials to be washed into streams or bodies of water.

7 Sod or seed slopes, as specified in Section 02950, as soon as possible to prevent erosion. If it is impossible to prevent erosion, the City may require construction of sedimentation basins to prevent water pollution.

8 The Contractor shall comply with all of the State of California Construction De-watering Permit requirements.

3.5 DUST PREVENTION

A. During the construction and until final acceptance by the City, the Contractor shall be responsible for controlling dust emissions in the construction area.

B. No earthwork activities shall be performed when the sustained wind speed exceeds thirty (30) miles per hour.

C. All fill areas shall be compacted on a daily basis as required in the project.

D. Any mud or dirt carried out onto paved surfaces shall be cleaned up in a daily basis.

E. The Contractor shall promptly comply will all directives from the City relating to dust control. If the Contractor fails to comply or provide adequate means to control dust, a stop work order will be \issued until the problems have been corrected.

END OF SECTION 01560

## SECTION 01700 PROJECT CLOSE OUT

PART 1: GENERAL

1.1 DESCRIPTION: The work of this section consist of final cleanup, closeout submittals, and final inspection procedures.

1.2 SUBMITTALS

A. As specified in this section.

PART 2: PRODUCTS - Not Used

PART 3: EXECUTION

3.1 POSTED OPERATING INSTRUCTIONS: As specified in the individual sections. Furnish operating instructions attached to or posted adjacent to equipment. Include wiring diagrams, control diagrams, control sequence, start-up, adjustment, operation, lubrication, shut-down, safety precautions, procedures in the event of equipment failure, and other items of instruction recommended by the manufacturer.

3.2 CLEANING: Remove all tools, equipment, surplus materials, and rubbish. Restore or refinish surfaces of existing facilities that are marred, scratched, or damaged due to the work of this contract to match original condition. Remove grease, dirt, stains, foreign materials, and labels from interior and exterior finished surfaces. Do any required waxing and polishing. Sweep paved areas; rake grounds. At time of final inspection, project shall be thoroughly clean and ready for use.

3.3 PROJECT RECORD DRAWINGS:

A. The contractor shall maintain an up to date set of red-lined record drawings which indicate all changes and revisions to the original design that affect the permanent structures and will exist in the completed work. The contractor shall also reference all underground utilities to semi-permanent or permanent physical objects. Reference water, sewer, telephone, and electric lines to corners of buildings. Include schematic diagrams showing terminal numbers for all electrical equipment.

B. Keep record drawings current. Inspection will be made monthly. Certification of accuracy and completeness will be required on monthly payment requisitions. Project record drawings are the property of the City and shall be delivered to the City before closeout.

3.4 CLOSEOUT SUBMITTALS: Submit before final inspection request

A. Project Record Drawings: As specified above.

B. Guarantees and Bonds: As specified in individual sections.

C. Spare Parts and Materials: As specified in individual sections.

D. Operation and Maintenance Data: As specified in Section 01730.

E. Operation and Maintenance Data: Provide four complete sets of the following data. Data shall be on 8½-inch by 11-inch sheets or manufacturers' standard catalogs, suitable for side binding. Include the following as applicable:

1. Replacement parts list
2. Wiring diagrams
3. Manufacturers' model numbers
4. Name, address, and telephone number of local representative
5. Basic operational features
6. Schedule of maintenance work
7. Lubricants
8. Emergency procedures
9. Starting, operating, and shut-down procedures
10. Seasonal shut-down procedures
11. Cleaning agents and methods
12. Color and texture designations.

F. Operating Tools: As specified in the individual sections.

G. Special Tools: One set of special tools required to operate, adjust, dismantle, or repair equipment. Special tools are those not normally found in possession of mechanics or maintenance personnel.

3.5 SUBSTANTIAL COMPLETION AND FINAL INSPECTION: Submit written certification that project, or designated portion of project, is substantially complete, and request in writing a final inspection. The City will make an inspection within 10 days of receipt of request.

A. When the City determines that the work is substantially complete, he will prepare a list of deficiencies to be corrected before final acceptance and issue a Letter of Substantial Completion.

B. If the City determines that the work is not substantially complete, he will immediately notify Contractor in writing, stating reasons. After completing work, Contractor shall resubmit certification and request a new final inspection.

3.6 ACCEPTANCE OF THE WORK: After all deficiencies have been corrected, a Letter of Acceptance will be issued.

3.7 POST-CONSTRUCTION INSPECTION: Before expiration of warranty period, the City will inspect the project and notify Contractor in writing of all deficiencies.

END OF SECTION 01700

# SECTION 02050 REMOVAL OF PAVEMENTS AND CONCRETE SLABS

## PART 1: GENERAL

1.1 DESCRIPTION: The work of this section consists of demolition and removal of pavements and concrete slabs. The work includes filling and grading.

1.2 QUALITY ASSURANCE: Comply with safety requirements for demolition, ANSI A10.6-83.

1.3 PROJECT CONDITIONS:

A. Keep dust to a minimum at removal site and on haul roads. Use sprinklers or water trucks as necessary.

B. Ensure safety of persons in demolition area.

## PART 2: PRODUCTS

PART 3: EXECUTION

3.1 PREPARATION: Protect buildings, structures, utilities, concrete/asphalt and vegetation to remain.

A. Provide Pedestrian and Traffic Control as necessary to ensure safe public access through the construction / demolition area.

3.2 DEMOLITION:

A. Pavement and Slabs: Scarify or rip bituminous pavement; break up concrete. Saw cut concrete and asphalt adjacent to new construction. Remove completely.

3.3 DISPOSAL:

A. Dispose of unsuitable and excess material offsite at approved facilities.

B. Salvaged Material: All salvaged material remains the property of the City. Store where directed by City.

END OF SECTION 02050

# SECTION 02115 CLEARING AND GRUBBING

## PART 1 - GENERAL

**CLEARING AND GRUBBING** shall conform to the provisions of Section 16, "Clearing and Grubbing", of Caltrans Standard Specifications and the following special provisions.

Limits of work shall include the beginning on the north-east section of project at Saratoga-Sunnyvale Road to south-west section Saratoga Ave. The width of the limits shall include the entire right-of- way of Pacific Gas & Electric approximate 75 feet in width. This includes the trail gap area located at the vicinity of Cox Ave with in PG&E's right-of –way, Santa Clara Valley Water Districts and Caltrans right-of –way.

**Caution:**

1. All existing raspberry bush/plants shall be protected during project operations and not cleared and grubbed.

2. Tress and bushes at adjacent residential fence line/property line shall be protected and not cleared and grubbed

### 1.1 SUMMARY

A. This Section includes, but is not limited to, the following:

A. Protection of existing trees.
B. Removal of trees and other vegetation.
C. Topsoil stripping.
D. Clearing and grubbing.
E. Removing of existing site trash
F. Removing of existing site debris
G. Removing of existing site wood chips
H. Removing of existing wood rails
I. Removing of existing train tracks
J. Removing of existing Asphalt Concrete debris
K. Removing of existing abandon concrete bags
L. Removing of existing abandon fence post
M. Removing and clearing area with in PG&E utility towers
N. Removing of any existing abandon concrete structures (RCP)
O. Removing above-grade improvements.
P. Removing below-grade improvements.

B. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing.

1. - Earthwork.

1.2 DESCRIPTION:

A. Provide complete removal of marked trees, shrubs and underbrush as determined by the City of Saratoga Public Works Department as necessary to complete project.

B. Any pruning of trees shall be performed under the supervision of an International Society of Arboriculture (ISA) Certified Arborist and according to ISA standards.

C. A preconstruction meeting shall be held with the contractor following installation of protective fencing and prior to start of work to review tree protection measures.

D. Unless otherwise approved, all construction activities shall be conducted outside the designated fenced area, including the time after fencing is removed. Construction activities include, but are not limited to, demolition, grading, trenching, equipment cleaning, stockpiling and dumping materials (including soil fill), and equipment/vehicle operation and parking.

E. Any approved grading or trenching beneath tree canopies shall be performed manually using shovels.

F. **Monitoring Report Program** prepared by LSA Associates, Inc., dated September 2008 shall be implemented. Contractor shall comply with all mitigation measures and shall complete the mitigation measures to the satisfaction of all agencies with jurisdiction.

**G. City of Saratoga Tree Protection Ordinance:** Article 15-50 of the City of Saratoga's Municipal Code (i.e., Tree Protection Ordinance) outlaws the removal, damage, pruning, or encroachment upon any protected tree located on private or public property without first having obtained a tree removal, pruning, or encroachment permit from the City. A protected tree is defined as any of the following:

- Any native tree having a diameter at breast height (dbh) of 6 inches (in) or greater
- Any other tree having a dbh of 10 in or greater
- Any street tree (i.e., within public street or right-of-way)
- Any heritage tree, defined in Article 15.50.020(l) as "any tree of historic significance as a tree having historic value related to the heritage of the City and designated by action of the City Council upon recommendation of the Heritage Preservation Commission"

3.1 Any tree required to be planted, retained, or replaced under other provisions of the Municipal Code

1.3 SCHEDULING:

A. Notify Owner's Representative 48 hours prior to beginning work.

**PART 2- PROJECT CONDITIONS**

A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities, unless otherwise noted, without permission from authorities having jurisdiction.

B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.

A. Protect improvements on adjoining properties and on Owner's property.
B. Restore damaged improvements to their original condition, as acceptable to property owners.

C. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place on Owner's property, in street right of way and in creek right of way, against unnecessary cutting, breaking or skinning of roots, skinning or bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

A. Water trees and other vegetation to remain within limits of contract work as required to maintain their health during course of construction operations.
B. Provide protection for roots over 1-1/2 inch diameter that are cut during construction operations. Coat cut faces with an emulsified asphalt, or other acceptable coating, formulated for use on damaged plant tissues. Temporarily

cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.

C. Repair or replace trees and vegetation indicated to remain which are damaged by construction operations, in a manner acceptable to Architect. Employ a licensed arborist to repair damages to trees and shrubs.

D. Replace trees which cannot be repaired and restored to full-growth status, as determined by arborist.

## PART 3 - PRODUCTS

3.1 MATERIALS:

A. Tree paint: water-proof, asphalt based paint, with anti-septic properties; R.I.W. Tree Surgery Paint by Toch Bros., New York; Sherwin-Williams Pruning Compound, or approved equal.

## PART 4 - EXECUTION

4.1 PROTECTION:

A. Provide protection of trees, shrubs, lawn areas, and other features remaining as part of final landscape.

B. Provide protection to bench marks, existing structure, roads, sidewalks, paving, utilities and curbs against damage from clearing operations, vehicular and foot traffic. Re-establish if disturbed.

C. Provide designated temporary roadways, walkways, and detours for vehicular and pedestrian traffic.

4.2 CLEARING:

A. General: Remove trees, shrubs, grass and other vegetation, improvements, or obstructions as required to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. "Removal" includes digging out and off-site disposing of stumps and roots or other material.

1. Cut minor roots and branches of trees indicated to remain in a clean and careful manner, where such roots and branches obstruct installation of new construction.

B. Topsoil: Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material.

2.1.1. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material.

2.1.1.1. Remove heavy growths of grass from areas before stripping.

2.1.1.2. Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to prevent damage to root system.

2.1.2. Stockpile suitable topsoil in storage piles in areas indicated or directed. Construct storage piles to provide free drainage of surface water. Cover storage piles, if required, to prevent wind erosion.

2.1.3. Dispose of unsuitable or excess topsoil same as specified for disposal of waste material, or use for fill if approved by Engineer or Owner's Geotechnical Engineer.

C. Provide cleaning of areas as required for access to site excavation and performance of Work.

D. Cut down marked trees and underbrush within marked areas. Grub out stumps, roots, and embedded rocks.

E. Clear out undergrowth and deadwood, up to an eight foot height, without disturbing sub-soil.

F. Do not disturb trees or roots of trees or shrubs which are to remain.

4.3 CLEAN UP:

A. Burning on Owner's Property: Burning is not permitted on Owner's property.

B. Removal from Owner's Property: Remove waste materials and unsuitable or excess topsoil from Owner's property, except as otherwise noted.

4.4 MEASUREMENT

A. Site clearing and grubbing shall be measured on a lump sum basis.

4.5 PAYMENT

A. The lump sum price paid for site clearing and grubbing shall include compensation for furnishing all materials, labor, equipment and incidentals for doing all the work involved in site clearing and grubbing as required in the Special Provisions, shown on the Plans herein, but excluding any work for which there is a pay item in the Contract.

**PART 4 – PICTURES OF SITE SAMPLES (STARTING FROM SOUTH-EAST SARATOGA AVE TO NORTH-WEST SARATOGA-SUNNYVLAE RD.**

**SARATOGA AVE (CALTRANS ROW): TRIM OR REMOVE SHRUBBERY**

**SARATOGA AVE (CALTRANS ROW): TRIM OR REMOVE SHRUBBERY**

**SARATOGA AVE (CALTRANS ROW): TRIM OR REMOVE SHRUBBERY**

**ALONG SARATOGA AVE (CALTRANS ROW): TRIM OR REMOVE SHRUBBERY**

**SANTA CLARA VALLEY WATER DISTRICT ( ROW): TRIM OR REMOVE SHRUBBERY, REMOVE POSTS**

**SARATOGA CREEK: TRIM OR REMOVE SHRUBBERY AND REMOVE TREE**

**EXISTING PARKING LOT CONGESS SPRING PARK: TRIM OR REMOVE SHRUBBERY**

**EXISTING PARKING LOT CONGESS SPRING PARK: TRIM OR REMOVE SHRUBBERY**

**EXISTING PARKING LOT CONGESS SPRING PARK: TRIM OR REMOVE SHRUBBERY**

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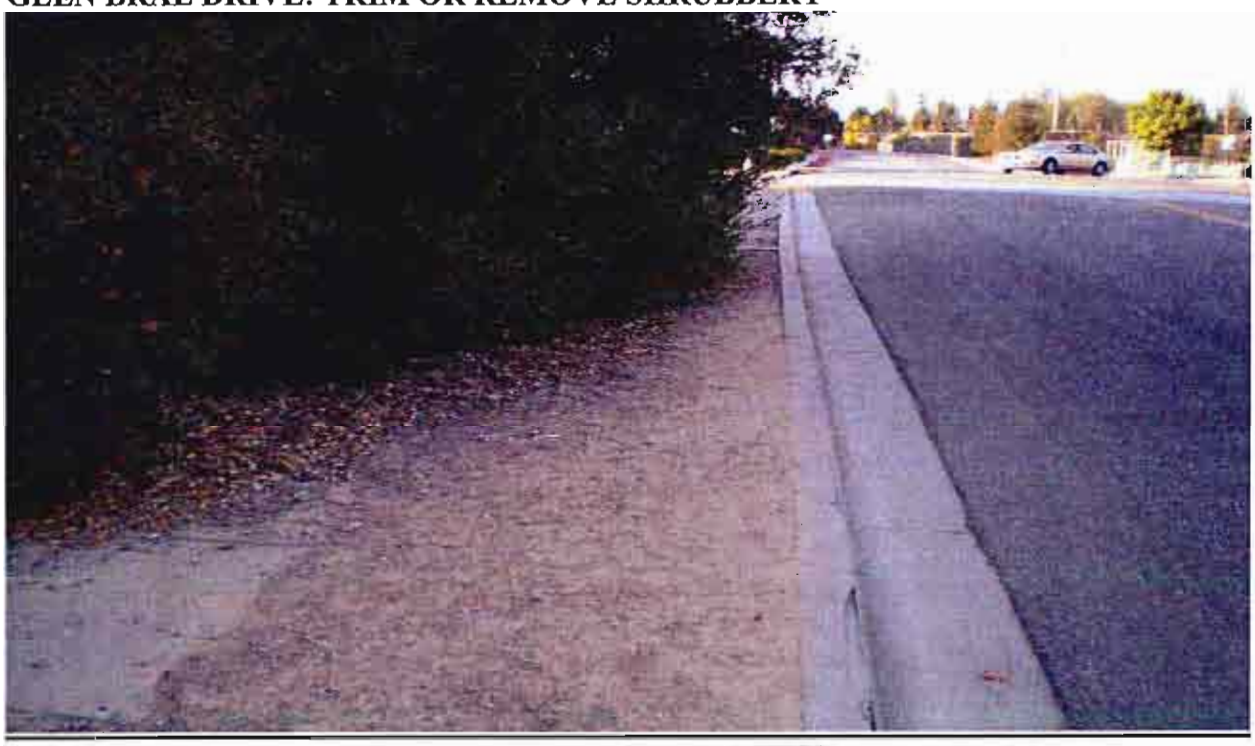
**EXISTING PARKING LOT CONGESS SPRING PARK: TRIM OR REMOVE SHRUBBERY**

**GLEN BRAE DRIVE: TRIM OR REMOVE SHRUBBERY**



**GLEN BRAE DRIVE: TRIM OR REMOVE SHRUBBERY**

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**TRIM OR REMOVE SHRUBBERY**

**TRIM OR REMOVE SHRUBBERY**

**TRIM OR REMOVE SHRUBBERY**

**CLEAR SURFACE**

**CLEAR SURFACE**

**REMOVE WOOD CHIPS, LOGS AND DEBRIS**

**REMOVE WOOD CHIPS, LOGS AND DEBRIS**

**REMOVE WOOD CHIPS, LOGS, DEBRIS AND TRIM OR REMOVE SHRUBBERY**

**REMOVE POSTS**

**REMOVE DEBRIS AND REMOVE SHRUBBERY IN AND AROUND TOWERS**

**REMOVE DEBRIS AND REMOVE SHRUBBERY IN AND AROUND TOWERS**

**REMOVE DEBRIS AND REMOVE WOOD RAILS**

**REMOVE ABANDON CONCRETE BAGS**

**TRIM OR REMOVE SHRUBBERY**

**REMOVE WOOD CHIPS, LOGS, DEBRIS AND TRIM OR REMOVE SHRUBBERY/TREES**

**REMOVE WOOD CHIPS, LOGS AND DEBRIS**

**REMOVE WOOD CHIPS, LOGS, DEBRIS AND TRIM OR REMOVE SHRUBBERY/TREES**

**TRIM OR REMOVE SHRUBBERY/TREES**

**CLEAR IN AND AROUND TOWERS**

**CLEAR TOP SOIL SURFACE**

**CLEAR TOP SOIL SURFACE**

**CLEAR AND REMOVE CUT VEGETATION/TREE BRANCHES (BRUSHWOOD)**

**CAUTION: RASPBERRY BUSH/PLANTS SHALL BE PROTECTED**

**CLEAR AND REMOVE CUT VEGETATION/TREE BRANCHES (BRUSHWOOD)**

**CLEAR AND REMOVE CUT VEGETATION/TREE BRANCHES (BRUSHWOOD)**

**CLEAR AND REMOVE CUT VEGETATION/TREE BRANCHES (BRUSHWOOD)**
**REMOVE WOOD CHIPS, LOGS AND DEBRIS**

**CAUTION: RASPBERRY BUSH/PLANTS SHALL BE PROTECTED**

**CAUTION: RASPBERRY BUSH/PLANTS SHALL BE PROTECTED**

**CLEAR AND REMOVE CUT VEGETATION/TREE BRANCHES (BRUSHWOOD)**

**CLEAR TOP SOIL SURFACE**

**CAUTION: RASPBERRY BUSH/PLANTS SHALL BE PROTECTED**

**REMOVE CONCRETE SLAPS AND DEBRIS**

**REMOVE WOOD CHIPS, LOGS, DEBRIS AND TRIM OR REMOVE SHRUBBERY/TREES IN AND AROUND TOWERS**

**REMOVE WOOD CHIPS, LOGS, DEBRIS, CONCRETE PIPES AND TRIM OR REMOVE SHRUBBERY/TREES**

**REMOVE WOOD CHIPS, LOGS, DEBRIS, CONCRETE PIPES AND TRIM OR REMOVE SHRUBBERY/TREES**

**REMOVE WOOD CHIPS, LOGS, DEBRIS, CONCRETE PIPES AND TRIM OR REMOVE SHRUBBERY/TREES**

**REMOVE WOOD CHIPS, LOGS, DEBRIS, CONCRETE PIPES AND TRIM OR REMOVE SHRUBBERY/TREES**

**REMOVE WOOD CHIPS, LOGS, DEBRIS, CONCRETE PIPES AND TRIM OR REMOVE SHRUBBERY/TREES**

**REMOVE AND CLEAR ASPHALT DEBRIS, TRAIN TRACKS, COBBLE STONE AND TRASH**

**REMOVE AND CLEAR ASPHALT DEBRIS, TRAIN TRACKS, COBBLE STONE AND TRASH**

**REMOVE WOOD CHIPS, LOGS, DEBRIS AND PILED SHRUBBERY**

**CLEAR AND REMOVE WOOD CHIPS, LOGS, DEBRIS AND TRIM OR REMOVE SHRUBBERY/TREES**

END SECTION 02115

## SECTION 02200 EARTHWORK

## 1 DESCRIPTION

This section shall consist of excavating, filling, stockpiling, removing, and satisfactorily disposing of all materials within the limits of the work required to construct the roadways and other areas for drainage or other purposes in accordance with these special provisions, and as specified in Section 19, Earthwork• of the State of California Department of Transportation Standard Specifications, latest edition and subsequent addenda, and in conformity with the dimensions and typical sections shown on the plans and with the lines and grade established by the Engineer.

## 2 MATERIALS

2.1 All suitable material taken from excavation shall be used in the formation of subgrade and for backfilling as indicated on the plans or as directed by the Engineer.

**2.2 CLASSIFICATION** All material excavated shall be defined as ■Unclassified Excavation.•

**2.3 FILL MATERIAL** There are two types of acceptable fill materials.

A. General Fill. All fill material shall be a soil or soil-rock mixture which is free from organic matter, rubble or other deleterious substances. The fill material shall not contain rocks or lumps over 6 inches in greatest dimension, and not more than 15 percent larger than 2-1/2 inches.

B. Select Fill. Select fill shall meet the above requirements for general fill and in addition it shall have a plasticity index no greater than 15.

## 3 CONSTRUCTION METHODS

**3.1 GENERAL** The rough excavation shall be carried to the necessary depth to obtain the specified depth of subgrade densification shown on the plans. Should the Contractor, through negligence or other fault, excavate below the designated lines, he shall replace the excavation with approved materials, in an approved manner and condition, at his own expense. The Engineer shall have complete control over the excavation, moving, placing, and disposition of all material and shall determine the suitability of material to be placed in embankments. All material determined unsuitable shall be disposed of offsite. Topsoil shall not be used in fills or in subgrades but shall be disposed of offsite.

The Contractor shall inform and satisfy himself as to the character, quantity, and distribution of all material to be excavated. No payment will be made for any excavated material which is used for purposes other than those designated. All point areas shall be leveled to a uniform line and section and shall present a neat appearance before project acceptance.

Those areas outside of the pavement areas in which the top layer of soil material becomes compacted due to hauling or to any other activity of the Contractor, shall be scarified and diced to a depth of 4 inches, as directed, to loosen and pulverize the soil.

**3.2 EXCAVATION** Excavation shall be performed as indicated on the contract plans to the lines, grades, and elevation shown or as directed by the Engineer, and shall be made so that the requirements for formation of embankments can be followed. No excavation or stripping shall be started until the Engineer has staked out the proposed work. All material encountered within the limits indicated shall be removed and disposed of. During the process of excavation, the grade shall be maintained so that it will be well drained at all times.

Mulch, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified, to provide a satisfactory foundation. Where roots of adjacent trees are encountered the roots are not to be cut but are to be protected with layers of wet burlap. Unsatisfactory materials shall be disposed of offsite at no additional cost. The portion so excavated shall be refilled with suitable selected material as specified, obtained from the grading operations or borrow area and thoroughly compacted by rolling. The necessary refilling will constitute a part of the embankment. Where trenching out is done to provide for a course of pavement, the depths thus creased shall be ditched at frequent intervals to provide adequate drainage. Widening or narrowing of the section and raising or lowering of the grade to avoid haul will not be permitted.

The installation and removal of utilities required to permit the orderly progress of work will be accomplished by local agencies, unless otherwise shown on the plans. All existing foundations shall be excavated for at least 2 feet below the top of the subgrade and the material disposed of as directed. All foundation thus excavated shall be backfilled with suitable material and compacted.

In cut areas, the subgrade under areas to be paved shall be compacted as specified on the plan. Material shall be moistened as specified on the plans prior to compaction. Any unsuitable materials encountered shall be removed from the site at no extra cost in accordance with Section 21 of the State of California Department of Transportation Standard Specifications latest edition and ubsequent addenda for Class A• subgrade.

Stones or rock fragments larger than 4 inches in their greatest dimension will not be permitted in the top 6 inches of the subgrade.

In cuts, all loose or protruding rocks on the back slopes shall be barred loose or otherwise removed to line or finished grade of slope. All cut-and-fill slopes shall be uniformly dressed to the slope, the typical section, and alignment shown on the plans.

Any excess excavation material from common excavation or trench spoil shall be stockpiled in a neat and uniform manner. Where any old fill materials or soft zones are exposed by excavation to the subgrade level, they shall be overexcavated and replaced with compacted fill. The Engineer shall approve the overexcavation before any additional earthwork is done.

3 **EQUIPMENT**

The Contractor may use any type of earthmoving, compaction, and watering equipment he may desire or has at his disposal, provided the equipment does not damage below grade structure or existing tree roots, is in a satisfactory condition and is of such capacity that the construction schedule can be maintained as planned by the Contractor and as approved by the Engineer in accordance with the calendar days bid for the construction. The Contractor shall furnish, operate, and maintain such equipment as is necessary to control uniform density, layers, section, and smoothness of grade.

4 **PREPARATION AND PROTECTION OF THE TOP OF THE SUBGRADE**. On areas to be paved, the specified depth cut areas shall be compacted to the density specified on the plans. When completed, the surface shall be true to the lines, grades, and cross sections shown on the plans.

After all drains, structures, ducts, and other underground appurtenances along the edges or under the pavement have been completed, the subgrade shall be compacted to the depth specified. Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at these places and adding, removing, or replacing material until the surface is smooth and uniform. Any portion of the area which is not accessible to a roller shall be compacted to the required density by approved mechanical tampers. The material shall be sprinkled with water during rolling or tamping, when directed by the Engineer.

At all times, the top of the subgrade shall be kept in such condition that it will drain readily and effectively. In handling materials, tools, and equipment, the Contractor shall protect the subgrade from damage by laying planks when directed and shall take other precautions as needed. In no case will vehicles be allowed to travel in a single track. If ruts are formed, the subgrade shall be reshaped and rolled.

5 **TOLERANCES** In those areas upon which a subbase or base course is to be placed, the top of the subgrade shall be of such smoothness that, when tested with a 16-foot straightedge applied parallel and at right angles to the centerline, it shall not shown any deviation in excess of . inch, or shall not be more than 0.05 foot from true grades established by grade hubs or pins. Any deviation in excess of these amounts shall be corrected by loosening, adding or removing materials, and recompacting by sprinkling and rolling.

6 **SUBGRADE PREPARATION** The subgrade shall be graded and prepared as specified in Section 21, ■Subgrade Preparation• and the "Special Subgrade Requirements" shown on the Plans. The "Special Subgrade Requirements" supercede the City Standard Specifications/Plan Details.

**END OF SECTION 02200**

# SECTION 02210 -EXCAVATION, EMBANKMENT AND COMPACTION

## PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Excavating and grading for site, landscaping areas and sidewalks.

B. Construction of all embankments.

C. Compaction of all subgrade.

D. Fine grading.

E. Rolling and all other work necessary for the completion of the subgrade and slopes.

F. Placement of Bedding Materials.

1.2 RELATED SECTIONS

A. Section 02221: TRENCHING, BEDDING, BACKFILL AND COMPACTION.

B. Section 02115: CLEARING AND GRUBBING

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):

AASHTO T-180 Moisture-Density Relations of Soils Using a 10-ln Rammer and an 18-inch Drop

Standard Specifications, State of California Department of Transportation.

ASTM D 698-91 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-1bf/ft (600kN-m/m)).

1.4 QUALITY ASSURANCE

A. Codes and Standards: Perform excavation work in compliance with applicable requirements of authorities having jurisdiction.

1.5 PROJECT CONDITIONS

A. Site Information: Data in subsurface investigation reports was used for the basis of the design are included in these Contract Documents and are available to the contractor for information only. Conditions are not intended representations or warranties of accuracy or continuity between soil borings. The Owner will not be responsible for interpretations or conclusions drawn from this data by contractor.

B. Existing Utilities: Locate existing underground utilities in areas of excavation work. If utilities are indicated to remain in place, provide adequate means of support and protection during earthwork operations.

(1) Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

(2) Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies for shutoff of services if lines are active.

C. Use of Explosives: Use of explosives is not permitted.

D. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights.

1. Operate warning lights as required by authorities having jurisdiction.

2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

3. Perform excavation by hand within dripline of large trees to remain. Protect root systems from damage or dryout to the greatest extent possible. Maintain moist condition for root systems and cover exposed roots with moistened burlap.

## 1.6 DEFINITIONS

A. Unclassified Excavation: Any and all earthen materials encountered, including rocks and boulders smaller than 0.5 cubic yards, during construction.

B. Embankment Fill: Earthwork consisting of embankments, including preparation of area upon which they are to be placed, placing and compacting of approved material, backfill within areas where unsuitable materials have been removed, and

placing and compacting of embankment material in holes, pits and other depressions to lines and grades shown on Drawings. Embankment Fill shall be granular, non-expansive material free of trash, debris, rock less than 3" in diameter, and organics. Prior to placement of the new embankment fill, all vegetation, organic soils, and highly compressible soils shall be removed. The Engineer shall review the exposed subgrade prior to the placement of embankment fill material. The Contractor shall proof roll embankment areas if requested by the Engineer.

C. Rock Excavation: Rock excavation shall consist of igneous, metamorphic, and sedimentary rock and boulders exceeding one cubic yard which cannot be excavated without blasting or the use of rippers equivalent to a Caterpillar D7 with ripper or a Caterpillar 225 track mounted backhoe with "rock teeth".

D. Borrow: Backfill or embankment material which must be acquired from designated borrow areas to make up deficient areas which cannot be completed from excavation within work limits.

E. Proof Rolling: The application of test loads over a subgrade surface by means of a heavy pneumatic-tired vehicle to locate weak areas in subgrade.

F. Subgrade Stabilization: The placement of stabilization material in areas of over-excavation, as replacement of unsuitable insitu material, or in areas of high water table to stabilize the insitu material.

G. Structure Backfill: Earthwork around a buried structure to bring the adjacent surface to the design grade, including preparation of the excavation floor and walls and placing and compacting of approved structure backfill material.

H. Structure Bedding Material: Material as indicated on the construction drawings to be placed under cast-in-place reinforced concrete structure and other indicated structures.

I. Pipe Bedding: Bedding material placed in a trench bottom in preparation for laying a pipe or conduit and shall meet the requirements of Class "B" Bedding as given in the Standard Specifications for the City of Saratoga.

I. Subsurface Drain: Free draining granular material placed in a trench usually with a perforated pipe to drain ground water. Subsurface Drain Material is specified in Section 02410.

J. Imported Structure Backfill: Imported Structural Backfill Material shall be used when suitable on-site materials are not available. Off-site Structural Backfill Materials as necessary to supplement available on-site Structure Backfill must be non-expansive material free of trash, debris and organics and no larger than 3" in any dimension.

L. Aggregate Base Course shall be placed on prepared subgrade as indicated on the Construction Drawings. Aggregate base course is specified in Section 02232.

1.7 CARE AND RESTORATION OF PROPERTY

A. On paved surfaces, the Contractor shall not use or operate tractors, bulldozers, or other power-operated equipment, the treads or wheels of which are so shaped as to cut or otherwise damage such surfaces.

B. All lawns, irrigation systems, paved surfaces, roadways, and structures which have been damaged by the contractor's operations shall be restored to a condition at least equal to that in which they were found immediately prior to the beginning of operations.

C. The restoration of existing property or structures shall be completed as promptly as practicable and shall not be left until the end of the construction period.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Embankment Fill Material shall classify as GW, GP, SW, SP, GC, GM, SC, or SM in accordance with the United Soil Classification System. Embankment Fill Material shall be granular, non-expansive material free of trash, debris, and organics. Material shall consists of 3" minus material having less than 35% passing the No. 200 sieve, a liquid limit less than 30 and a plasticity index less than 15. The onsite sands and gravels are suitable materials. Onsite clays will be expansive in a compacted condition and are not suitable materials under sidewalks or structures.

B. Stabilization material shall meet the gradation of "No. 4 Coarse Aggregate" as specified in Section 703.02 of the California Department of Transportation CALTRANS Standard Specifications Stabilization Material shall meet the following gradation requirements.

| Sieve Size | Percentages Passing Designated Sieve Sizes |
|---|---|
| 2 inches | 100 |
| 1.5 inch | 90-100 |
| 1 inch | 20-55 |
| 3/4 inch | 0-15 |
| 3/8 inch | 0-5 |

C. On-site Structure Backfill Material shall consists of suitable materials developed on the project. To be suitable for use under this classification, backfill shall be

free of frozen lumps, wood, or other organic material, it shall consists of 3" minus material having less than 35% passing the No. 200 sieve, a liquid limit less than 30 and a plasticity index less than 15. If the material contains rock fragments that, in the opinion of the Engineer, will be injurious to the structure, the native material shall not be used and material shall be imported that meets the requirements for imported structure backfill.

D. Structure Bedding Material shall meet the gradation of No. 4 Coarse Aggregate as specified by Section 7.03.02 of the CALTRANS Standard Specifications.

E. Imported Structure Backfill shall meet the requirements of Class I Structure Backfill as specified in Section 703.08 of the CALTRANS Standards Specifications. In addition, this material shall have a liquid limit not exceeding 35 and a plasticity index of not over six when determined in conformity with AASHTO T 89 and T 90, respectively.

## *IMPORTED STRUCTURE BACKFILL*

| Sieve Size | Percent Passing |
|---|---|
| 2-inch | 100 |
| No. 4 | 30 to 100 |
| No. 50 | 10 to 60 |
| No. 200 | 5 to 20 |

F. Clean sand shall meet the following gradation requirements:

## *CLEAN SAND*

| Sieve Size | Percent Passing |
|---|---|
| 3/8 inch | 100 |
| No. 200 | 0 to 5 |

G. Subsurface Drain Material Type 1 shall meet the gradation of No. 4 Coarse Aggregate as specified by Section 7.03.02 of the CALTRANS Standard Specifications.

H. Class "B" Pipe Bedding shall be a well-graded crushed stone or slag. When tested by means of laboratory sieves it shall conform to the following requirements: (AASHTO M43, No. 67 gradation).

| Sieve Size | Percent Passing |
|---|---|
| 1 inches | 100 |
| 3/4 inch | 90-100 |
| 3/8 inch | 20-55 |
| No. 4 | 0-10 |
| No. 8 | 0-5 |

When crushed gravel or stone is used, at least 50 percent, by weight, of the particles retained on the No. 4 sieve and above shall have at least two (2) fractured faces.

## PART 3 - EXECUTION

### 3.1 PREPARATION

A. Protect subgrade against freezing temperatures or frost. Provide protective insulating materials as necessary.

B. Provide erosion control measures to prevent erosion or displacement of soil and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways. See Section 02400.

C. Prior to placement of new embankment fill, structure backfill, or bedding material all vegetation, organic soils, and highly compressible soils shall be removed. The Engineer shall review the exposed subgrade prior to placement of new embankment fill, structure backfill or bedding material.

D. Prior to placing embankment fill, the area shall be proof rolled to ensure the subgrade has been properly prepared. Any soft spots detected shall be removed to 1.0' below subgrade and stabilized with Embankment Fill Material at no extra cost. If stabilization deeper that 1.0' is required and in areas of high water table, refer to subgrade stabilization below.

### 3.2 EXCAVATION, EMBANKMENT, AND COMPACTION

A. Prior to placing embankment fill, the area shall be proof rolled to ensure the subgrade has been properly prepared. Any soft spots detected shall be removed and stabilized.

B. Excavation operation, the forming of embankment, excess material stockpiles and the shaping of the subgrade, walkways and side slopes shall be in accordance with methods herein specified.

C. When grading occurs around existing trees, the Contractor shall stay 1 foot per caliper inch away from the tree.

D. In excavation operations, and in the formation of embankments, operations shall be so conducted as to provide positive drainage at all times subject to the provisions in the Drawings and Specifications regarding erosion control measures.

E. The Contractor shall satisfy himself of the character of the material to be moved. Rock, if encountered, shall be excavated to a depth of six (6) inches below subgrade, and backfilled with embankment material. When rock excavation is encountered as defined in Part 1 of this specification, the Contractor shall notify the Engineer for field verification.

F. Embankment fill material and structure backfill shall be excess cut material from the site excavation or imported material The material shall be placed in successive horizontal layers not exceeding eight (8) inches in depth (loose measurement) and shall be compacted with suitable compactors to not less than the following percentages of the maximum dry density as determined in accordance with ASTM D 698:

## *COMPACTION SPECIFICATION TABLE*

| Location | Cohesive Soils<br>% Max Dry Density | Non-cohesive Soils<br>% Max Rel. Density |
|---|---|---|
| Scarified subgrade under an embankment, fill under roads and drainage channels | 95% | 75% |
| Embankment under structures | 100% | 80% |
| All Other Areas | 90% | 70% |

During compaction, the moisture content of the embankment material shall be controlled to within plus or minus 2 percent of the optimum moisture content determined in accordance with ASTM D 698. For compaction of the embankment material, the contractor shall provide kneading rollers, vibratory sheepsfoot rollers, rubbertired rollers, vibratory rollers or whatever other type of compaction equipment is necessary to achieve the compaction requirements indicated above. The Contractor is advised that drying of the excavated material

may require spreading, disking, or other material may require spreading, disking, or other material handling and rehandling procedures. Whenever the embankment material is either wetted or dried to adjust its moisture content, the material should be tilled or otherwise thoroughly mixed so that the moisture content is uniformly distributed within each layer of soil placed. Mobilizing different types of compaction equipment as required and handling the embankment material to adjust its moisture content will not be basis for any additional compensation to the Contractor beyond the unit prices bid for applicable work items.

H. When embankment is to be superimposed upon undisturbed (natural) soil, the surface shall be scarified to a depth of six (6) inches and compacted to 100% of the maximum dry density as determined in accordance with ASTM D 698. The moisture content of the scarified material shall be adjusted as required to achieve the required compaction. In cut areas, the upper 6 inches shall be scarified and re-compacted to 100% of the maximum dry density as determined in accordance with ASTM D 698.

I. No frozen material shall be placed in embankments, and any material which freezes after being placed in embankment shall not be covered over until it has thawed out and been re-compacted, if necessary, or removed.

J. Excavated areas shall be watered by the contractor as required to prevent the propagation of dust.

K. After completion of embankment construction, topsoil shall be spread in the areas shown on the Drawings and seed, sod or plantings placed in areas designated on the construction drawings.

L. All cast-in-place concrete structures, and retaining walls shall be bedded with structure bedding a minimum of 12" deep under the structure, or as otherwise detailed on the Construction Drawings.

8.3 SUBGRADE STABILIZATION

A. When excessively soft or yielding material is discovered in excess of one foot deep below the subgrade, the Contractor shall notify the Engineer. Upon verification of the unsuitable material, the Engineer may approve excavation and removal of the material and replacement with Stabilization Material. If the soft or yielding materials was caused by the Contractor's operations, no extra payment will be made.

B. When a high water table is discovered, the Contractor shall notify the Engineer. Upon verification of the high water table, the Engineer may approve over excavation and backfill with Stabilization Material. Subgrade stabilization will not be approved as a substitute for proper dewatering. Should the Contractor over

excavate below or outside the cut limits shown on the drawings, he shall at this own expense backfill the excavation to the proposed subgrade. For this backfill in dry conditions, Embankment Fill Material compacted in accordance with the Compaction Specification Table may be used. In wet conditions, Stabilization Material may be required by the Engineer.

3.4 ACCEPTANCE REQUIREMENTS

A. TOLERANCES

1. Finished surfaces shall be fine graded so they are free-draining and shall be within an allowable tolerance of plus or minus 0.10 foot from the grades shown on the Drawings, minus the thickness of surface course materials or replaced topsoil layer.

2. Regardless of the specified tolerance, all grading and compaction shall be performed in such a manner that finished surfaces are in uniform planes with no abrupt breaks in the surface and the ground is free-draining.

B. COMPACTION

1. All fill material shall be placed to the dry densities listed in the Compaction Specification Table as a minimum.

3.5 EROSION CONTROL

A. Provide erosion control methods in accordance with the Construction Drawings and Section 02400.

3.6 MAINTENANCE

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and reestablish grades in settled, eroded, and rutted areas to specified tolerances.

C. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact to required density prior to further construction.

D. Settling: Where settling is measurable or observable at excavated areas, remove surface (pavement, lawn, or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent

work, and eliminate evidence of restoration to greatest extent possible.

3.7 DISPOSAL OF EXCESS AND WASTE MATERIALS

A. Removal from Owner's Property: Remove waste materials, including unacceptable excavated material, trash, and debris, and dispose of it off Owner's property.

END OF SECTION 02210

# SECTION 02231 DECOMPOSED GRANITE (GOLD FINES)

## PART 1 - GENERAL

### 1.1 SUMMARY

A. This Section includes material and labor requirements for construction with decomposed granite (GOLD FINES) only following items (ITEM #10):

1. DECOMPOSED GRANITE PATHWAY (GOLD FINES)

B. Related Sections:

1. Section 02200 - Earthwork

### 1.2 PERFORMANCE REQUIREMENTS

A. Perform gradation of decomposed granite material (GOLD FINES) of 3/8" or 1/4" minus crushed aggregate in
accordance with ASTM C 136 - Method for Sieve Analysis for Fine and Course.

### 1.3 SUBMITTALS

A. Products Data: For each product specified. Submit a 5 lb. sample and sieve analysis for grading of decomposed granite (GOLD FINES) to be sent to City Engineer of the City of Saratoga prior to any construction - (allow 2-week turn around). Must be approved by City Engineer

B. Shop Drawings: Show details of installation, including plans and sections.

### 1.4 PROJECT/SITE CONDITIONS

A. Field Measurements: Each bidder is required to visit the site of the Work to verify the existing conditions. No adjustments will be made to the Contract Sum for variations in the existing conditions.

1. Where surfacing is indicated to fit with other construction, verify dimensions of other construction by field measurements before proceeding with the work.

B. Environmental Limitations: Do not install decomposed granite (GOLD FINES) or crushed 3/8" or 1/4" minus aggregate paving during rainy conditions or below 40 degrees Fahrenheit and falling.

### 1.5 QUALITY ASSURANCE

A. Installer Qualifications: Installer to provide evidence to indicate successful experience in providing decomposed granite or crushed 3/8" or 1/4" minus aggregate paving.

B. Mock-ups: Install 4 ft. wide x 10 ft. long mock-up of decomposed granite (GOLD FINES) crushed aggregate paving at location as directed by City of Saratoga Public Works Department.

## 1.6 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by the Contractor under requirements of the Contract Documents.

B. Special Warranty: Submit a written warranty executed by the installer agreeing to repair or replace components of stabilized surfacing that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Premature wear and tear, provide the material is maintained in accordance with manufacturer's written maintenance instructions.
2. Failure of system to meet performance requirements.

C. Warranty Period: Contractor shall provide warranty for performance of product. Contractor shall warranty installation of product for the time of one year from completion.

D. Contractor shall provide, for a period of sixty days, unconditional maintenance and repairs as required.

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

## 2.2 MATERIALS

A. Decomposed granite (GOLD FINES) screenings

1. Crushed Stone Sieve Analysis Percentage of Weight Passing a Square Mesh Sieve AASHTO T11-82 and T27-82

¼" MINUS AGGREGATE GRADUATION

| U.S. Sieve No. | Percent Passing by Weight |
|---|---|
| # 3/8" | 100 |
| # 4 | 90 -100 |
| # 8 | 75 - 80 |
| # 16 | 55 - 65 |
| # 30 | 40 - 50 |
| # 50 | 25 - 35 |
| # 100 | 15 - 20 |
| # 200 to | 10 - 15 |

2. Local supplier list to be provided to City of Saratoga for approval.

## 2.3 EXCESS MATERIALS

A. Provide owner's authorized representative with the following excess materials for use in future decomposed granite (GOLD FINES) crushed aggregate paving repair: 40 to 50 lbs. bags of the aggregate paving.

## PART 3 - EXECUTION

## 3.1 BLENDING STABILIER

A. Blend 12 to 16-lbs (call manufacturer for exact blend) of Stabilizer per 1-ton of decomposed granite (GOLD FINES) aggregate screenings. It is critical that Stabilizer be thoroughly and uniformly mixed throughout decomposed granite or crushed 1/4" or 3/8" minus aggregate screenings. Bucket blending is not acceptable. Blending with a rake and or shovel is not acceptable. Blend material dry.

## 3.2 PLACEMENT

A. Place the decomposed aggregate (GOLD FINES) screenings on prepared sub-grade. Level to desired grade and cross section.

B. Depth of pathways - 4" for heavy foot traffic and light vehicles.

## 3.4 COMPACTION

A. Upon thorough moisture penetration, compact aggregate screenings to 95% relative compaction by equipment such as; a 2 to 4-ton double drum roller or a 1,000-lb. single drum roller. Do not begin compaction for 6 hours after placement and up to 48 hours.

B. Take care in compacting decomposed granite (GOLD FINES) aggregate screenings when adjacent to planting and irrigation systems. Hand tamping with 8" or 10" hand tamp recommended.

## 3.5 INSPECTION

A. Finished surface of pathway shall be smooth, uniform and solid. There shall be no evidence of chipping or cracking. Cured and compacted pathway shall be firm throughout profile with no spongy areas. Loose material shall not be present on the surface. Any significant irregularities in path surface shall be repaired to the uniformity of entire installation.

## 3.6 MAINTENANCE

A. Remove debris, such as paper, grass clippings, leaves or other organic material by mechanically blowing or hand raking the surface as needed. Any plowing program required during winter months shall involve the use of a rubber baffle on the plow blade or wheels on the plow that lifts the blade 1/4" off the paving surface.

B. During the first year, a minor amount of loose aggregate will appear on the paving surface (1/16" to 1/4"). If this material exceeds 1/4", redistribute the material over the entire surface. Water thoroughly to the depth of 1". Compact with power roller of no less than 1000 lbs. This process should be repeated as needed.

C. If cracking occurs, simply sweep fines into the cracks, water thoroughly and hand tamp with an 8" - 10" hand tamp plate.

## 3.7 REPAIRS

A. Excavate damaged area to the depth of the aggregate and square off sidewalls.

B. If area is dry, moisten damaged portion lightly.

C. Apply moistened aggregate to excavate are to finish grade.

D. Compact with an 8" to 10" hand tamp or 250 to 300 pound roller. Keep traffic off areas for 12 to 48 hours after repair has been completed.

END OF SECTION 02231

## SECTION 02232 – AGGREGATE BASE COURSE

PART 1 - GENERAL

1.1 DESCRIPTION:

Provide granular base beneath paving.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A. Earthwork - Section 02200.

B. Asphaltic Paving - Section 02511.

C. Walks - Section 02515.

D. Cast-in-place Concrete - Section 03300.

1.3 COORDINATION:

Coordinate sub-grade preparation with earthwork and utility trades.

PART 2 - PRODUCTS

2.1 GRANULAR BASE MATERIAL:

Aggregate base shall conform to the requirements of Section 26 of the State Standard Specifications and the City Standard Specifications.

PART 3 - EXECUTION

3.1 SUBGRADE PREPARATION:

A. General: Complete the grading operations and prepare the subgrade for paving. The subgrade is defined as that portion of the road bed upon which the granular base is to be placed. Finish the subgrade to lines, grades and sections shown on the drawings. Remove and replace soft, yielding material, clods or other material with suitable materials. Scarify the upper six inches in both cuts and fills and compact to a uniform density, as determined in accordance with "Compaction Ratio Method, for Selection of Density and Soils and Base Materials in Place."

B. Compaction: Compact the top 6" subgrade to meet the following density requirements:

| Soils Plasticity Index | Density Required Optimum Moisture |
|---|---|
| 20 or more | 90% |
| 20 or less | 95% |

C. Rock Subgrade: Loosen encountered rock to a depth of twelve inches below the required subgrade elevation and replace with suitable materials from the excavation. Compact to the density specified above.

D. Maintaining Density: Do not allow the finished subgrade to be disturbed by traffic or other operations. Recompact the subgrade in the manner specified above when the subgrade becomes softened by rain or frost action, or other cause to the extent that it does not have the specified density and moisture content at the time of placement of the next course.

3.2 BASE MATERIAL:

A. General: Install base course in maximum six inch lifts.

3.3 COMPACTION:

"Density Control" method of compaction is to be used, and the following provision shall apply:

A. Density: Compact the base at not less than optimum moisture to provide a density of not less than 95% of standard proctor.

B. Grade Surfaces: Smooth to within plus/minus 0.10 feet established base course elevations. Maintain in smooth compacted condition until final surface is placed.

END OF SECTION 02232

# CALTRANS TYPE B ASPHALT CONCRETE

3. Reference to asphalt conceret in this document shall be of Type B Medium, ½ inch maximum aggregate size, medium graded, per Section 39 of the Caltrans Standard Specifications for Construction of Local Streets and Roads, May 2006 Edition.

- **Recycle Asphalt Product (RAP) will not be accepted**

PART 1) - GENERAL

a) RELATED DOCUMENTS

i) Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

b) SUMMARY

i) This Section includes provisions for hot-mixed asphalt paving and base over prepared subbase and all work specified herein, and as shown on the drawings.

B. Related Sections: The following sections are noted as containing requirements that relate to this Section, but may not be limited to this listing:

1. Division 2 - Site Clearing, and Earthwork

c) SUBMITTALS

i) General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

ii) Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with State of California, Department of Transportation, Caltrans Standard Specification (latest edition), and with local regulations if more stringent than herein specified.

1.5 SITE CONDITIONS

A. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg F (10 deg C) and when temperature has not been below 35 deg F (1 deg C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

B. Construct hot-mixed asphalt surface course when atmospheric temperature is above 40 deg F (4 deg C) and when base is dry. Base course may be placed when air temperature is above 30 deg F (minus 1 deg C) and rising.

iii) Grade Control: Establish and maintain required lines and elevations.

## *PART 2) - PRODUCTS*

a) MATERIALS

i) General: Use locally available materials and gradations that exhibit a satisfactory record of previous installations.

ii) Base Coarse Aggregate: Sound, angular crushed stone, crushed gravel, or crushed slag, sand, stone, or slag screenings. Comply with Caltrans Standard Specification, Section 26 for Class 2 base.

iii) Herbicide Material: Commercial chemical for weed control, registered by Environmental Protection Agency Provide granular, liquid, or wettable powder form.

D. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

1. Ciba-Geigy Corp.
2. Dow Chemical U.S.A.
3. E.I. Du Pont de Nemours & Co., Inc.
4. FMC Corp.
5. Thompson-Hayward Chemical Co.
6. U.S. Borax and Chemical Corp.

E. Prime Coat: Cutback asphalt type AASHTO M82 (ASTM D2027) SC-3, SC-70, or SC-250.

F. Tack Coat: Emulsified asphalt, AASHTO M140 (ASTM D 997) or AASHTO M208 (ASTM D2397) SS-1, SS-1h, CSS-1, or CSS-1h, diluted with one part water to one part emulsified asphalt.

G. Surface Course Aggregate: Crushed stone, crushed gravel, crushed slag and sharp edged natural sand.

H. Asphalt Cement: Conform to AASHTO M226 (ASTM D3381) and to Caltrans Standard Specification, Section 39; provide viscosity grade AR-8000.

K. Header Boards: "Foundation Grade" (Selected from Construction Heart) Redwood as specified in Paragraph 316 "Standard Specifications for Grades of California Redwood Lumber", November 1970 Edition.

L. Pavement Stripes and Pavement Markings: Paint Type, per Section 84 of the Caltrans Standard Specifications for Construction of Local Streets and Roads, May 2006 Edition

M. Pavement Markers: per Section 85 of the Caltrans Standard Specifications for Construction of Local Streets and Roads, May 2006 Edition

2.2 ASPHALT-AGGREGATE MIXTURE

A. Asphalt concrete pavement sections 3 inches thick or less shall be installed in single lift.

B. Asphalt concrete pavement sections greater than 3 inches thick shall be installed in two (2) lifts in conformity with Caltrans' Standard Specifications, Section 39:

1. Base Lift: 1-1/2" minimum, Type "B" asphalt concrete, 1/2" maximum aggregate size, medium graded.
2. Top Lift: 1-1/2" minimum, Type "B" asphalt concrete, 1/2" maximum aggregate size, medium graded.

C. Asphalt Concrete Dike: Type A asphalt concrete, 3/8", and maximum aggregate size.

PART 3) - EXECUTION

a) SURFACE PREPARATION

A. Remove loose material from compacted subbase surface immediately before applying weed control agent.

B. Proof-roll prepared subbase surface to check for unstable areas and areas requiring additional compaction.

C. Notify Contractor of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.

D. Base Course: Place and compact aggregate base course to thicknesses required for each section. Compact base course to 95% minimum relative compaction. Comply with requirements of Standard Specification, Chapter 26.

E. Herbicide Treatment: Apply chemical weed control agent in strict compliance with manufacturer's recommended dosages and application instructions. Apply to compacted, dry subbase prior to placement of base course. Extreme care shall be exercised during application that no weed killer is applied to area(s) not to be paved.

F. Prime Coat: Apply at rate of 0.20 to 0.50 gal. per sq. yd., over compacted subgrade. Apply material to penetrate and seal, but not flood, surface. Cure and dry as long as necessary to attain penetration and evaporation of volatile.

G. Tack Coat: Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into hot-mixed asphalt pavement. Distribute at rate of 0.05 to 0.15 gal. per sq. yd. of surface.

H. Allow to dry until at proper condition to receive paving.

I. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

J. Installation of Header Boards: Install header boards at all pavement edges not bound by concrete curbs. Provide header boards of size and thickness detailed or noted on the drawings, if no size is indicated; provide 2x4 header boards. Set header board true to lines and grades, staked as detailed. Construct curves with nailed up laminations to required thickness. All butt joints, back joint both sides with 1"x3"x12" strips, nailed through and clinched.

K. Existing Asphaltic Concrete Paving:

1. Repair damage caused by construction operations and restore to condition prior to construction.

2. Restoration may be accomplished by patching defects, resurfacing, completely replacing, or combination of these measures, but measure taken shall be adequate for work of restoration required and shall be subject to the Engineer's approval.

L. Seal Coat: Apply fog seal coat, and when indicated on the drawings, a slurry seal, in accordance with CSS Section 37 to all existing and new asphaltic concrete paving.

1. Mask adjoining surfaces and areas, including curb faces, and take all other necessary precautions as required to prevent over-spray and splatter of the seal coat material on the adjacent surfaces or areas. In the event the precautions taken are not adequate, clean all traces of over-spray and splatter form all surfaces to the satisfaction of the Engineer.

b) PLACING MIX

i) General: Place hot-mixed asphalt mixture on prepared surface, spread, and strike off. Spread mixture at minimum temperature of 225 deg F (107 deg C). Place areas inaccessible to equipment by hand. Place each course to required grade, cross-section, and compacted thickness.

ii) Paver: Shall have a sonar sensor with a paving leveling ski.

iii) Paver Placing: Asphalt pavers shall be self-propelled mechanical spreading and finishing equipment, provided with a screed or strike-off assembly capable of distributing the material to no less than the full width of traffic lane, unless otherwise acceptable to Engineer. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course.

iv) Immediately correct surface irregularities in finish course behind paver. Remove excess material forming high spots with shovel or lute.

v) Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density, and smoothness as other sections of hot-mixed asphalt course. Clean contact surfaces and apply tack coat.

vi) Curbs: Construct curbs over compacted pavement surfaces. Apply a light tack coat unless pavement surface is still tacky and free from dust.

vii) Place curb materials to cross-section indicated or, if not indicated, to local standard shapes, by machine or by hand in wood or metal forms. Tamp hand-placed materials and screed to smooth finish. Remove forms as soon as material has cooled.

c) ROLLING

i) General: Begin rolling when mixture will bear roller weight without excessive displacement.

ii) Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

iii) Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.

iv) Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.

v) Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained 96 percent laboratory maximum compacted density.

vi) Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut out such areas and fill with fresh, hot-mixed asphalt. Compact by rolling to specified surface density and smoothness.

vii) Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

viii) Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.4 DIKES

A. Asphalt dikes shall be placed on newly laid asphalt pavement free from dust.

B. Dikes shall be shaped and compacted with an extrusion machine or other equipment capable of shaping and compacting the material to the required cross section.

3.5 TRAFFIC, PARKING STALL AND LANE MARKINGS

A. Cleaning: Sweep and clean surface to eliminate loose material and dust.

B. Remove existing parking stall painting by sand blasting.

C. Striping: Paint Type, per Section 84 of the Caltrans Standard Specifications for Construction of Local Streets and Roads, May 2006 Edition

D. Do not apply traffic and lane marking paint until layout and placement have been verified with Engineer.

E. Apply paint with mechanical equipment to produce uniform straight edges. Apply at manufacturer's recommended rates to provide minimum 12 to 15 mils dry thickness. Use white color for normal striping, unless otherwise noted. Use blue color at handicap facilities.

3.6 WHEEL STOPS

A. General: Secure wheel stops to hot-mixed asphalt surface with not less than two 3/4-inch-diameter galvanized steel dowels embedded in precast concrete at 1/3 points.

3.7 FIELD QUALITY CONTROL

A. General: Testing in-place hot-mixed asphalt courses for compliance with requirements for thickness and surface smoothness may be done by City's testing laboratory. Repair or remove and replace unacceptable paving as directed by Engineer.

B. Thickness: In-place compacted thickness tested in accordance with ASTM D 3549 will not be acceptable if exceeding following allowable variations:

(1) Total Asphalt Concrete Section: Plus or minus 1/4 inch.

C. Surface Smoothness: Test finished surface of each hot-mixed asphalt course for smoothness, using 10-foot straightedge applied parallel with and at right

angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:

1. Base Course Surface: 1/4 inch.
(2) Wearing Course Surface: 3/16 inch.

D. Check surface areas at intervals as directed by Engineer.

E. Drainage: After completion of paving work, all paving shall be flooded with water, and any resulting "ponds" shall be ringed with chalk. Such hollows shall be corrected with addition of asphalt concrete and rerolling until paving is completely level and free from hollows and high spots.

END OF SECTION 02511

## SECTION 02515 WALKS, CURBS, RAMPS AND GUTTERS

PART 1: - GENERAL

DESCRIPTION: The work of this section consists of constructing walks, curbs, ramps and gutters. Class B Portland Cement Concrete (5 sack mix with 1 pint lampblack /cubic yard.

Constructing walks, curbs, ramps and gutters shall conform to the conform to provisions of Section 73 from Caltrans Standard Specifications May 2006

Ramps shall be Caltrans 2006 Case "A" Ramp. The width of the ramp shall be eight (8) feet wide with raised truncated dome pattern (in line) detectable warning surface. The color shall be armor title dark grey federal color No. 36118

ALTERNATE CONSTRUCTION METHODS: Concrete slabs for walks shall be formed, placed, vibrated, and finished by hand using conventional methods. Concrete curbs or curbs and gutters may be constructed in the same manner, but Contractor has the option of machine placing curbs using the extrusion method or machine placing curb and gutter using the slip-form method.

QUALITY ASSURANCE:

A. Contractor / Subcontractor performing concrete work for this section shall have a minimum of five years experience.

B. Construct a five foot (5') square sample of gray sidewalk paving, and a ten foot (10') long section of curb and gutter, to show surface texture, joints, and general appearance of acceptable work will be required. No work shall be performed until the sample has been approved and becomes the standard of comparison for acceptability of all work. The sample may be part of the work required to be placed for the project.

C. Construct a five foot (5') square concrete sample for each color of colored concrete work, to show surface texture, color, and general appearance of acceptable work. No work shall be performed until the sample has been approved and becomes the standard of comparison for acceptability of all work. The sample will be used by the Owner to ensure all colored concrete work is a consistent color. Colored concrete work which the Owner feels deviates from the approved sample shall be removed and replaced at no additional cost to the Owner.

1.4 SUBMITTALS: As specified in Section 01300.

A. Furnish statement of composition of concrete mix and evidence that mix meets specified quality.

B. Samples of color additive material and mix design

A. Description of machines proposed for concrete extruding or slip-forming.

B. Product Literature for Curing Agents
C. Product literature for Standard and Colored Concrete elastomeric sealants

D. Removable Plastic Expansion Joint Cap Strip

1.5 PROJECT CONDITIONS: Place concrete only when temperatures are above 35 degrees F, unless it is protected from freezing in accordance with ACI Cold Weather concrete provisions.

1.6 RELATED SPECIFICATIONS:

Section 03100 - Concrete Formwork
Section 03200 - Concrete Reinforcement
Section 03300 - Cast-In-Place Concrete
Section 03354 – Integral Colored Concrete

PART 2: - PRODUCTS:

2.1 STRUCTURAL FILL: As specified in Section 02210-Excavation, Embankment, and Compaction.

2.2 CONCRETE: As specified in Division 03300.

2.3 COLORED CONCRETE: Davis Colors, or approved equal

2.4 CONCRETE REINFORCEMENT: As specified in Division 03200

2.5 EXPANSION DOWELS: Smooth steel dowels conforming to AASHTO M 183 with gage metal sleeves. Size, number and spacing shall be as specified in the contract drawings.

2.6 REMOVABLE PLASTIC EXPANSION JOINT CAPS: Pre-molded plastic 1/2" expansion joint material ½" Dia plastic cap conforming AASHTO M 213.

2.7 EXPANSION JOINT MATERIAL: Asphalt Impregnated Cellulose Fiber, ASTM-D1751;

2.8 EXPANSION JOINT SEALANTS: Sonneborn NP 2 or approved equal

2.9 CURING COMPOUND: ASTM C309-81, Type 1 for Gray Concrete and Manufacture's Approved Colored Curing Compound for Colored Concrete Work;

2.10 CURING MATERIAL: Waterproof paper, polyethylene sheet, clean burlap, cotton mats, or other approved material, free of substances that may cause stain or discoloration.

PART 3: - EXECUTION

3.1 SAWCUTTING: All concrete removal shall be to a saw joint unless it can be demonstrated that an existing joint is of such character that removal can be accomplished to a neat line. Sawcutting shall be at a depth equal to at least 1/2 the depth of the concrete. In no case shall a piece of concrete curb and gutter or crosspan be left which is closer than five feet to the nearest control joint.

3.2 PREPARATION OF SUBGRADE:

A. Excavate to required depth and to a width equal to the width of the concrete to be placed plus one foot (1') beyond the outer edge of the concrete to be placed.

B. In fill areas, the material shall be placed for the full width of the concrete to be placed plus two feet (2') beyond the outer edge of the concrete to be placed and shall slope to the existing ground on a two-to-one (2:1) slope, or as specified on the contract drawings.

C. Place a minimum of six inches of Class VI roadbase material under all concrete sidewalks.

D. Remove soft, yielding material and replace with select fill. Compact to a density of not less than 95 percent of the maximum density as determined by AASHTO T99-81,Method D.

E. If tree roots are encountered in the areas to receive concrete, the root shall be cut a distance of 12" behind the area to be replaced. Prior to cutting the tree root,

3.3 MAINTENANCE OF SUBGRADE: Maintain subgrade in a compacted condition until concrete is placed.

3.4 FORMS: As specified in Division 03100 and the following:

A. Metal or uniform warp-free lumber of a height not less than the designed depth of the adjacent concrete, coated with form release agent.

B. Stake securely, and grade forms to ensure straight, plumb alignments. Flexible forms shall be used on all curves having a radii of less than 200 feet. Staking shall have no less than three (3) staking points per ten (10) feet of length with means for locking the form to the stake

C. Forms with greater height than the thickness of the concrete specified may be used if the upper edge is set accurately to line and grade and the subgrade is excavated to meet the bottom edge of the forms in a slope not steeper than one inch (1) vertical to four (4)inches horizontal. The extra cost for the concrete shall be furnished at no additional cost to the City.

D. Under no condition shall the forms be blocked up with stones, broken concrete, wood or similar materials

E. Obtain approval of alignment and grade before placing concrete.

3.6 PLACING: Place concrete on moistened subgrade monolithically between construction joints. Deposit to full depth in one operation. Consolidate immediately. After depositing concrete, screed and darby or bullfloat.

SLAB FINISHING: After darbying or bullfloating, stop finishing until bleeding has ceased and until concrete can contain foot pressure with only about 1/4-inch indentation. Edge and joint, then float the slab. After floating, use steel trowel to density surface, then broom slab perpendicular to line of traffic.

CURING/WEATHER PROTECTION:

The Contractor shall apply curing compound immediately after finishing the concrete surface.

Curing compound shall be applied at the rate as recommended by the manufacturer.

The Contractor shall provide for weather protection on the concrete per the requirements of the ACI Cold weather concrete practice manual.

Any concrete surface deformation or discoloration's caused by weather protection equipment shall be removed and replaced by the Contractor at no additional cost to the Owner.

3.9 JOINTS: Construct all joints true to line with faces perpendicular to surface.

A. Isolation Joints: Separate walks from walls, curbs, stairways, and other structures, using expansion joint fillers.

B. Contraction (Control) Joints: Space walk joints at intervals depicted in the contract drawings. If the joint spacing is not specified, sidewalk joints shall be spaced about equal to width of the walks, and space curb and gutter joints not over 12 feet 6 inches on center, and align them with sidewalk joints. Contraction joints may be either sawed or tooled.

1. Sawed: Cut with a power saw fitted with an abrasive or diamond blade, to a depth of one-fourth the walk depth, and the entire width of the slab, within 4 to 12 hours after walk has been placed and finished.

2. Tooled: Form plane of weakness by inserting and later removing a metal divider, or by cutting one quarter to one third depth with a suitable tool when concrete is plastic. Finish all grooves with and edge or a groover.

C. Expansion Joints: Construct joints as specified in the contract drawings or as follows:

1. Place expansion joint material to the full width and depth of the walk, driveway, or curb and gutter, as indicated on the Contract drawings or at least once every fifty feet (50') or as directed by the City.

2. Expansion joints shall be placed between an attached sidewalk and the curb and gutter; where the walk is in a confined area such as between a retaining or foundation wall; between concrete sidewalks and any fixed structure; and any special condition as specified by the City

3. If joint spacing for the curb and gutter is not specified in the contract drawings, space walk joints at intervals about equal to width or walk. Space curb and gutter joints not over 12 feet 6 inches on center, and align them with sidewalk joints.

4. All expansion joints in concrete sidewalks and curb and gutter shall have expansion dowels. Dowels shall be smooth, ¾" diameter X 12" long, with approved metal expansion caps. Dowels shall be placed at 2'-0" on center unless otherwise depicted in the contract documents.

5. After concrete has cured, all expansion joints shall be caulked and sealed in accordance with the manufacture's recommendations. Properly protect sealed joints until the product is cured.

3.9 FORM REMOVAL: Remove forms within 24 hours after concrete placement. Repair minor defects with mortar. Plastering will not be permitted on exposed faces.

3.10 FIELD QUALITY CONTROL:

A. Horizontal Surfaces shall not vary more than 1/8 inch when tested with a 10-foot straight edge.

B. Vertical faces shall not vary more than ¼ inch when tested with a 10' straight edge.

C. All tooled joints and edges shall be straight and clean.

D. Colored concrete work shall be compared to the sample panel to ensure proper color.

E. Expansion joint sealants shall be uniformly applied without surface defects such as bubbles or jagged edges.

F. The Contractor shall provide barricades for wet concrete work to prevent public or other construction equipment from damaging the uncured surface.

3.11 CONCRETE TESTS: Contractor shall notify the City 24 hours prior to placement to schedule testing. Any failed tests shall be paid for by the Contractor in accordance to ARTICLE 2B - Special Requirements.

3.12 CONCRETE MARKING: All new concrete shall have the name of the contractor and the year of construction (only) impressed therein using block letters not less than one inch (1") height and one quarter inch (1/4") deep. One impression shall be made at each end of the concrete pour and at intervals of not more than fifty feet (50').

3.13 CLEAN-UP: Upon completion of the work, remove all debris, concrete splatter, and excess materials and leave area in a neat, clean, acceptable condition.

END OF SECTION 02515

## SECTION 03100 CONCRETE FORMWORK

# *PART 1 - GENERAL*

1.1 DESCRIPTION

A. This section shall apply to all concrete formwork for the project.

1.2 SECTION INCLUDES

A. Formwork for cast-in-place concrete, with shoring, bracing and anchorage.

B. Openings for other affected work.

C. Form accessories.

D. Stripping forms.

1.3 RELATED SECTIONS

A. Section 02515 WALKS, CURBS, AND GUTTERS

B. Section 03200 CONCRETE REINFORCEMENT

C. Section 03300 CAST-IN-PLACE CONCRETE

1.4 REFERENCES

A. ACI 301 Specifications for Structural Concrete for Buildings.

B. ACI 347 Recommended Practice for Concrete Formwork.

C. ACI 306R Cold Weather Concreting

D. PS 1 Construction and Industrial Plywood.

1.5 SYSTEM DESCRIPTION

A. Design, engineer and construct framework, shoring, and bracing to meet design and code requirements, so that resultant concrete conforms to required shapes, lines and dimensions.

1.6 QUALITY ASSURANCE

A. Construct and erect concrete formwork in accordance with ACI 301 and 347.

1.7 SUBMITTALS

A. As specified in Section 01300

PART 2 - PRODUCTS

2.1 FORM MATERIALS

A. Plywood: PS-1, HDO grade, Class I.

B. Glass Fiber Fabric Reinforced Plastic Forms: Matched tight fitting, stiffened to support weight of concrete without deflection detrimental to structural tolerances and appearance of finished concrete surface.

C. High Density Masonite Forms: Matched tight fitting, stiffened to support weight of concrete without deflection detrimental to structural tolerances and appearance of finished concrete surface.

2.2 FORMWORK ACCESSORIES

A. Form Ties: Snap-off metal of fixed length; one-inch break back dimension, free of defects that will leave holes no larger than one-inch diameter in concrete surface.

B. Form Release Agent: Colorless material which will not stain concrete or absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.

C. Fillets for Chamfered Corners: Wood strips or Rigid plastic type; 3/4 x 3/4 inch size unless noted otherwise; maximum possible lengths.

D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of strength and character to maintain formwork in place while placing concrete.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify lines, levels and measurements before proceeding with formwork.

3.2 PREPARATION

A. Earth forms not permitted except as depicted on the drawings for below grade cutoff walls.

B. Minimize form joints. Symmetrically align joints and make watertight to prevent leakage of mortar.

C. Arrange and assemble formwork to permit stripping, so that concrete is not damaged during its removal.

Arrange forms to allow stripping without removal of principal shores, where required to remain in place.

3.3 ERECTION

A. Provide bracing to ensure stability of formwork. Strengthen formwork liable to be overstressed by construction loads.

B. Construct formwork to maintain tolerances in accordance with ACI 301

C. Provide 3/4-inch chamfer strips at all exposed edges and as shown on Drawings.

D. Areas of formwork requiring horizontal curvature shall have chord dimensions no greater than 2 feet.

3.4 APPLICATION OF FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.

B. Do not apply form release agent where concrete surfaces are scheduled to receive applied coverings or special finishes which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for work embedded in or passing through concrete.

B. Coordinate work of other Sections in forming and setting openings, slots, recesses, sleeves, bolts, anchors, and other inserts.

C. Install accessories in accordance with manufacturer's instructions, level and plumb. Ensure items are not disturbed during concrete placement. Install water-stops in locations as shown on the Drawings. Refer to Section 03250 for Waterstop Requirements.

3.6 FORM REMOVAL

A. Notify Engineer prior to removing formwork.

B. Do not remove forms and shoring until concrete has sufficient strength to support its own weight, and construction and design loads which may be imposed upon it. Concrete shall not be backfilled or loaded until the concrete has obtained 80% of the design strength.

C. Remove formwork progressively so no unbalanced loads are imposed on structure.

D. Do not damage concrete surfaces during form removal.

Formwork for integrally colored concrete shall be stripped at a consistent time interval after the pour. A variation of +/-2 hours in the time interval between completion of a pour and form stripping shall be permitted.

Weather protection, if required, shall be installed such that the concrete surface shall not be damaged or discolored. Any areas damage or discoloration shall be removed if requested by the Engineer.

3.7 CLEANING

A. Clean forms to remove foreign matter as erection proceeds.

B. Ensure that water and debris drain to exterior through clean-out ports.

During cold weather, remove ice and snow from forms. Do not use de-icing salts. Do not use water to clean out completed forms, unless formwork and construction proceed within heated enclosure. Use compressed air to remove foreign matter.

END OF SECTION 03100

# SECTION 03250 CONCRETE ACCESSORIES

## PART 1 - GENERAL

### 1.1 DESCRIPTION

A. Work Included: Work consists of furnishing all labor, material and equipment necessary to install waterstops, expansion joint material, and joint caulking material.

### 1.2 RELATED SECTIONS

SECTION 03300: Cast-in-Place Concrete

### 1.3 REFERENCES

CRD-C572 Corps of Engineers Specification for Polyvinyl Chloride Waterstops

ASTM D1752-84 Specification for Preformed Sponge Rubber and Cork Expansion Joint Filler for Concrete Paving and Structural Construction

ASTM D1751-83 Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bitaminous Types)

ASTM C-920-87 Specification for Elastomeric Joint Sealers

### 1.4 SUBMITTALS

A.. Submit a statement confirming use of specified products or product literature for alternative products.

## PART 2 - PRODUCTS

### 2.1 POLYVINYL CHLORIDE (PVC) WATERSTOPS

A. All materials shall comply with the requirements of CRD-C572 Corps of Engineers specification for Polyvinyl Chloride Waterstops.

The specific waterstop intended for use on this project is the Type 4B waterstop manufactured by Horn/Dura Joint, or equal.

Sales Representative:

Pro Coat Systems, Inc.
5775 Stapleton Drive North, S-200
Denver, Colorado 80216
303-322-9009

2.2 ALTERNATIVE WATERSTOPS AT NON-EXPANSION JOINTS

Expansion Joint Fillers. The sales representative for RX-101-T CETCO Bentonite waterstop is Pro Coat System, Inc. as shown above.

2.3 EXPANSION JOINT MATERIAL

A. Expansion Joint Material shall meet the requirements of ASTM D1751-83 for all expansion joint used in flatwork, with premanufactured removable plastic caps

2.4 EXPANSION JOINT SEALANT MATERIAL

All Expansion Joints shall be sealed shall be sealed unless otherwise indicated on the contract drawings, or as approved by the Engineer. The specific joint sealant material intended for use for crack control joints is Sikaflex 1CSL or 2 CSL at the option of the contractor, and applied in accordance with the manufacturer's recommendations. Joints may be required to be primed with Sika 429 or backed with backer rod prior to the installation of the joint sealant.

Closed cell backer rod 1/2" thick shall be inserted in crack control joints a minimum of 24 hours before installing the control joint resin. The acceptability of an alternative Expansion Joint Sealant Material shall be determined during the shop drawing phase.

PART 3 - EXECUTION

3.1 WATERSTOP INSTALLATION

Waterstops shall be furnished full length for each straight portion of the joint, without field splices. Field splices shall have a full size tensile strength of 100 pounds per inch of width. Waterstops, when being installed, shall be cut and spliced at changes in direction as may be necessary to avoid buckling or distortion of the web or flange. If, after placing concrete, waterstops are substantially out of position or chape, the surrounding concrete shall be removed, the waterstop reset or replaced if damaged, and the concrete replaced at the Contractor's expense.

RX-101-T CETCO Bentonite waterstops, if used, shall be installed per the

manufacturers recommendations for installation.

3.2 EXPANSION JOINT MATERIAL INSTALLATION

A. Install Expansion Joint Material as shown on the Construction Drawings.

3.3 EXPANSION JOINT SEALANT INSTALLATION

A. Apply expansion joint sealant material when ambient air temperature is between 40 - 100 degrees F.

B. Pour joint sealant into joint slot in one direction and allow sealant to flow and level out as necessary.

END OF SECTION 03250

## SECTION 03500 DUST CONTROL

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

## SECTION 03750 STREET SWEEPING

Street sweeping shall be conducted where sediment is tracked from the job site onto paved roads, as described in the approved Storm Water Pollution Prevention Plan (SWPPP) in accordance with "Water Pollution Control" of these special provisions, and as directed by the Engineer.

Street sweeping shall be one of the water pollution control practices for sediment control. The SWPPP shall include the use of street sweeping. Street sweeping shall be performed in accordance with Section 4, SC-7 in the Construction Site Best Management Practices Manual of the Caltrans Storm Water Quality Handbooks.

The number of street sweepers shall be as designated in the approved SWPPP. The Contractor shall maintain at least one sweeper on the job site at all times during the period that sweeping work is required. Sweepers shall be self-loading, motorized, and shall have spray nozzles. Sweepers may include a vacuum apparatus.

Street sweeping shall start at the beginning of clearing and grubbing and shall continue until completion of the project, or as directed by the Engineer. Street sweeping shall be performed immediately after soil disturbing activities occur or offsite tracking of material is observed. Street sweeping shall be performed so that dust is minimized. If dust generation is excessive or sediment pickup is ineffective as determined by the Engineer, the use of water or a vacuum will be required.

At the option of the Contractor, collected material may be temporarily stockpiled in accordance with the approved SWPPP. Collected material shall be disposed of at least once per week.

Material collected during street sweeping operations shall be disposed of in conformance with Section 7-1.13, "Disposal of Material Outside The Highway Right Of Way," of the Standard Specifications.

**MEASUREMENT AND PAYMENT (SHALL BE PAID AS PART OF MOBOLIZATION ITEM #1)**

# SECTION 04500 PILLING

## GENERAL

Piling shall conform to the provisions in Section 49, "Piling," of the Standard Specifications, and these special provisions.

Unless otherwise specified, welding of any work performed in conformance with the provisions in Section 49, "Piling," of the Standard Specifications, shall be in conformance with the requirements in AWS D1.1.

Difficult pile installation is anticipated due to the presence of existing trees, high voltage overhead power lines, caving soils, high ground water and cobbles and boulders.

## CAST-IN-DRILLED-HOLE CONCRETE PILES

Cast-in-drilled-hole concrete piling shall conform to the provisions in Section 49-4, "Cast-In-Place Concrete Piles," of the Standard Specifications and these special provisions.

The provisions of "Welding" of these special provisions shall not apply to temporary steel casings.

Cast-in-drilled-hole concrete piles 24 inches in diameter or larger may be constructed by excavation and depositing concrete under slurry.

## MATERIALS

Concrete deposited under slurry shall have a nominal penetration equal to or greater than 3-1/2 inches. Concrete shall be proportioned to prevent excessive bleed water and segregation.

Concrete deposited under slurry shall contain not less than 675 pounds of cementitious material per cubic yard.

The combined aggregate grading used in concrete for cast-in-drilled-hole concrete piling shall be either the one-inch maximum grading, the 1/2-inch maximum grading, or the 3/8-inch maximum grading and shall conform to the requirements in Section 90-3, "Aggregate Gradings," of the Standard Specifications.

### Mineral Slurry

Mineral slurry shall be mixed and thoroughly hydrated in slurry tanks, and slurry shall be sampled from the slurry tanks and tested before placement in the drilled hole.

Slurry shall be recirculated or continuously agitated in the drilled hole to maintain the specified properties.

Recirculation shall include removal of drill cuttings from the slurry before discharging the slurry back into the drilled hole. When recirculation is used, the slurry shall be sampled and tested at least every 2 hours after beginning its use until tests show that the samples taken from the slurry tank and from near the bottom of the hole have consistent specified properties. Subsequently, slurry shall be sampled at least twice per shift as long as the specified properties remain consistent.

Slurry that is not recirculated in the drilled hole shall be sampled and tested at least every 2 hours after beginning its use. The slurry shall be sampled mid-height and near the bottom of the hole. Slurry shall be recirculated when tests show that the samples taken from mid-height and near the bottom of the hole do not have consistent specified properties.

Slurry shall also be sampled and tested before final cleaning of the bottom of the hole and again just before placing concrete. Samples shall be taken from mid-height and near the bottom of the hole. Cleaning of the bottom of the hole and placement of the concrete shall not start until tests show that the samples taken from mid-height and near the bottom of the hole have consistent specified properties.

Mineral slurry shall be tested for conformance to the requirements shown in the following table:

| MINERAL SLURRY | | |
|---|---|---|
| PROPERTY | REQUIREMENT | TEST |
| Density (pcf)<br><br>- before placement in the drilled hole<br>- during drilling<br><br>- before final cleaning<br>- immediately before placing concrete | <br><br>64.3* to 69.1*<br><br><br><br>64.3* to 75.0* | <br><br>Mud Weight (Density) API 13B-1 Section 1 |
| Viscosity (seconds/quart)<br><br>bentonite<br><br>attapulgite | <br>28 to 50<br><br>28 to 40 | Marsh Funnel and Cup API 13B-1 Section 2.2 |
| pH | 8 to 10.5 | Glass Electrode pH Meter or pH Paper |
| Sand Content (percent)<br><br>- before final cleaning<br>- immediately before placing concrete | <br><br>less than or equal to 4.0 | <br>Sand API 13B-1 Section 5 |
| *When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 2 pcf. Slurry temperature shall be at least 40°F when tested. | | |

Any caked slurry on the sides or bottom of hole shall be removed before placing reinforcement. If concrete is not placed immediately after placing reinforcement, the reinforcement shall be removed and cleaned of slurry, the sides of the drilled hole cleaned of caked slurry, and the reinforcement again placed in the hole for concrete placement.

## Synthetic Slurry

Synthetic slurries shall be used in conformance with the manufacturer's recommendations and these special provisions. The following synthetic slurries may be used:

| PRODUCT | MANUFACTURER |
|---|---|
| SlurryPro CDP | KB Technologies Ltd.<br>3648 FM 1960 West<br>Suite 107<br>Houston, TX 77068<br>(800) 525-5237 |
| Super Mud | PDS Company<br>c/o Champion Equipment Company<br>8140 East Rosecrans Ave.<br>Paramount, CA 90723<br>(562) 634-8180 |
| Shore Pac GCV | CETCO Drilling Products Group<br>1350 West Shure Drive<br>Arlington Heights, IL 60004<br>(847) 392-5800 |
| Novagel Polymer | Geo-Tech Drilling Fluids<br>220 N. Zapata Hwy, Suite 11A<br>Laredo, TX 78043<br>(210) 587-4758 |

Inclusion of a synthetic slurry on the above list may be obtained by meeting the Department's requirements for synthetic slurries. The requirements can be obtained from the Offices of Structures Design, P.O. Box 168041, MS# 9-4/11G, Sacramento, CA 95816-8041.
Synthetic slurries listed may not be appropriate for a given site.

Synthetic slurries shall not be used in holes drilled in primarily soft or very soft cohesive soils as determined by the Engineer.

A manufacturer's representative, as approved by the Engineer, shall provide technical assistance for the use of their product, shall be at the site before introduction of the synthetic slurry into a drilled hole, and shall remain at the site until released by the Engineer.
Synthetic slurries shall be sampled and tested at both mid-height and near the bottom of the drilled hole. Samples shall be taken and tested during drilling as necessary to verify the control of the properties of the slurry. Samples shall be taken and tested when drilling is complete, but before final cleaning of the bottom of the hole. When samples are in conformance with the requirements shown in the following tables for each slurry product, the bottom of the hole shall be cleaned and any loose or settled material removed. Samples shall be obtained and tested after final cleaning and immediately before placing concrete.
SlurryPro CDP synthetic slurries shall be tested for conformance to the requirements shown in the following table:

| SLURRYPRO CDP<br>KB Technologies Ltd. | | |
|---|---|---|
| PROPERTY | REQUIREMENT | TEST |
| Density (pcf)<br><br>- during drilling<br><br><br>- before final cleaning<br>- just before placing concrete | <br><br>less than or equal to 67.0*<br><br><br>less than or equal to 64.0* | Mud Weight (Density) API 13B-1 Section 1 |
| Viscosity (seconds/quart)<br><br>- during drilling<br><br><br>-before final cleaning<br>- just before placing concrete | <br><br>50 to 120<br><br><br>less than or equal to 70 | Marsh Funnel and Cup API 13B-1 Section 2.2 |
| pH | 6 to 11.5 | Glass Electrode pH Meter or pH Paper |
| Sand Content (percent)<br><br>- before final cleaning<br>- just before placing concrete | <br><br>less than or equal to 0.5 | Sand API 13B-1 Section 5 |
| *When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 2 pcf. Slurry temperature shall be at least 40°F when tested. | | |

Super Mud synthetic slurries shall be tested for conformance to the requirements shown in the following table:

| SUPER MUD<br>PDS Company | | |
|---|---|---|
| PROPERTY | REQUIREMENT | TEST |
| Density (pcf)<br><br>- before final cleaning<br>- just before placing concrete | less than or equal to 64.0* | Mud Weight (Density) API 13B-1 Section 1 |
| Viscosity (seconds/quart)<br><br>- during drilling<br><br>- before final cleaning<br>- just before placing concrete | 32 to 60<br><br>less than or equal to 60 | Marsh Funnel and Cup API 13B-1 Section 2.2 |
| pH | 8 to 10.0 | Glass Electrode pH Meter or pH Paper |
| Sand Content (percent)<br><br>- before final cleaning<br>-just before placing concrete | less than or equal to 0.5 | Sand API 13B-1 Section 5 |
| *When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 2 pcf. Slurry temperature shall be at least 40°F when tested. | | |

Shore Pac GCV synthetic slurries shall be tested for conformance to the requirements shown in the following table:

| Shore Pac GCV<br>CETCO Drilling Products Group | | |
|---|---|---|
| PROPERTY | REQUIREMENT | TEST |
| Density (pcf)<br><br>- before final cleaning<br>- just before placing concrete | less than or equal to 64.0* | Mud Weight (Density) API 13B-1 Section 1 |
| Viscosity (seconds/quart)<br><br>- during drilling<br><br><br>- before final cleaning<br>- just before placing concrete | 33 to 74<br><br>less than or equal to 57 | Marsh Funnel and Cup API 13B-1 Section 2.2 |
| pH | 8.0 to 11.0 | Glass Electrode pH Meter or pH Paper |
| Sand Content (percent)<br><br>- before final cleaning<br>-just before placing concrete | less than or equal to 0.5 | Sand API 13B-1 Section 5 |
| *When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 2 pcf. Slurry temperature shall be at least 40°F when tested. | | |

Novagel Polymer synthetic slurries shall be tested for conformance to the requirements shown in the following table:

| NOVAGEL POLYMER<br>Geo-Tech Drilling Fluids | | |
|---|---|---|
| PROPERTY | REQUIREMENT | TEST |
| Density (pcf)<br><br>- during drilling<br><br>- before final cleaning<br>- just before placing concrete | less than or equal to 67.0*<br><br>less than or equal to 64.0* | Mud Weight (Density) API 13B-1 Section 1 |
| Viscosity (seconds/quart)<br><br>- during drilling<br><br>- before final cleaning<br>- just before placing concrete | 45 to 104<br><br>less than or equal to 104 | Marsh Funnel and Cup API 13B-1 Section 2.2 |
| pH | 6.0 to 11.5 | Glass Electrode pH Meter or pH Paper |
| Sand Content (percent)<br><br>- before final cleaning<br>-just before placing concrete | less than or equal to 0.5 | Sand API 13B-1 Section 5 |
| *When approved by the Engineer, slurry may be used in salt water, and the allowable densities may be increased up to 2 pcf. Slurry temperature shall be at least 40°F when tested. | | |

## Water Slurry

At the option of the Contractor, water may be used as slurry when casing is used for the entire length of the drilled hole.

Water slurry shall be tested for conformance to the requirements shown in the following table:

| WATER SLURRY | | |
|---|---|---|
| PROPERTY | REQUIREMENT | TEST |
| Density (pcf)<br><br>- before final cleaning<br>- just before placing concrete | 63.5* | Mud Weight (Density) API 13B-1 Section 1 |
| Sand Content (percent)<br><br>- before final cleaning<br>-just before placing concrete | less than or equal to 0.5 | Sand API 13B-1 Section 5 |
| *When approved by the Engineer, salt water slurry may be used and the allowable densities may be increased up to 2 pcf. | | |

## Construction

The Contractor shall submit a placing plan to the Engineer for approval prior to producing the test batch for cast-in-drilled-hole concrete piling and at least 10 working days prior to constructing piling. The plan shall include complete descriptions, details, and supporting calculations as listed below:

A. Requirements for all cast-in-drilled-hole concrete piling:

1. Concrete mix design, certified test data, and trial batch reports.
2. Drilling or coring methods and equipment.
3. Proposed method for casing installation and removal when necessary.
4. Plan view drawing of pile showing reinforcement.
5. Methods for placing, positioning, and supporting bar reinforcement.
6. Methods and equipment for accurately determining the depth of concrete and actual and theoretical volume placed, including effects on volume of concrete when any casings are withdrawn.
7. Methods and equipment for verifying that the bottom of the drilled hole is clean prior to placing concrete.
8. Methods and equipment for preventing upward movement of reinforcement, including the Contractor's means of detecting and measuring upward movement during concrete placement operations.

B. Additional requirements when concrete is placed under slurry:

1. Plan view drawing of pile showing inspection pipes.

2. Concrete batching, delivery, and placing systems, including time schedules and capacities therefor. Time schedules shall include the time required for each concrete placing operation at each pile.
3. Concrete placing rate calculations. When requested by the Engineer, calculations shall be based on the initial pump pressures or static head on the concrete and losses throughout the placing system, including anticipated head of slurry and concrete to be displaced.
4. Suppliers' test reports on the physical and chemical properties of the slurry and any proposed slurry chemical additives, including Material Safety Data Sheet.
5. Slurry testing equipment and procedures.
6. Methods of removal and disposal of excavation, slurry, and contaminated concrete, including removal rates.
7. Methods and equipment for slurry agitating, recirculating, and cleaning.

In addition to compressive strength requirements, the consistency of the concrete to be deposited under slurry shall be verified before use by producing a test batch. The test batch shall be produced and delivered to the project under conditions and in time periods similar to those expected during the placement of concrete in the piles. Concrete for the test batch shall be placed in an excavated hole or suitable container of adequate size to allow for testing as specified herein. Depositing of test batch concrete under slurry will not be required. In addition to meeting the specified nominal penetration, the test batch shall meet the following requirements:

A. For piles where the time required for each concrete placing operation, as submitted in the placing plan, will be 2 hours or less, the test batch shall demonstrate that the proposed concrete mix design achieves either a penetration of at least 2 inches or a slump of at least 5 inches after twice that time has elapsed.
B. For piles where the time required for each concrete placing operation, as submitted in the placing plan, will be more than 2 hours, the test batch shall demonstrate that the proposed concrete mix design achieves either a penetration of at least 2 inches or a slump of at least 5 inches after that time plus 2 hours has elapsed.

The time period shall begin at the start of placement. The concrete shall not be vibrated or agitated during the test period. Penetration tests shall be performed in conformance with the requirements in California Test 533. Slump tests shall be performed in conformance with the requirements in ASTM Designation: C 143/C143M. Upon completion of testing, the concrete shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

The concrete deposited under slurry shall be carefully placed in a compact, monolithic mass and by a method that will prevent washing of the concrete. Concrete deposited under slurry need not be vibrated. Placing concrete shall be a continuous operation lasting not more than the time required for each concrete placing operation at each pile,

as submitted in the placing plan, unless otherwise approved in writing by the Engineer. The concrete shall be placed with concrete pumps and delivery tube system of adequate number and size to complete the placing of concrete in the time specified. The delivery tube system shall consist of one of the following:

A. A tremie tube or tubes, each of which are at least 10 inches in diameter, fed by one or more concrete pumps.
B. One or more concrete pump tubes, each fed by a single concrete pump.

The delivery tube system shall consist of watertight tubes with sufficient rigidity to keep the ends always in the mass of concrete placed. If only one delivery tube is utilized to place the concrete, the tube shall be placed near the center of the drilled hole. Multiple tubes shall be uniformly spaced in the hole. Internal bracing for the steel reinforcing cage shall accommodate the delivery tube system. Tremies shall not be used for piles without space for a 10-inch tube.

Spillage of concrete into the slurry during concrete placing operations shall not be allowed. Delivery tubes shall be capped with a watertight cap, or plugged above the slurry level with a good quality, tight fitting, moving plug that will expel the slurry from the tube as the tube is charged with concrete. The cap or plug shall be designed to be released as the tube is charged. The pump discharge or tremie tube shall extend to the bottom of the hole before charging the tube with concrete. After charging the delivery tube system with concrete, the flow of concrete through a tube shall be induced by slightly raising the discharge end. During concrete placement, the tip of the delivery tube shall be maintained as follows to prevent reentry of the slurry into the tube. Until at least 10 feet of concrete has been placed, the tip of the delivery tube shall be within 6 inches of the bottom of the drilled hole, and then the embedment of the tip shall be maintained at least 10 feet below the top surface of the concrete. Rapid raising or lowering of the delivery tube shall not be permitted. If the seal is lost or the delivery tube becomes plugged and must be removed, the tube shall be withdrawn, the tube cleaned, the tip of the tube capped to prevent entrance of the slurry, and the operation restarted by pushing the capped tube 10 feet into the concrete and then reinitiating the flow of concrete.

When slurry is used, a fully operational standby concrete pump, adequate to complete the work in the time specified, shall be provided at the site during concrete placement. The slurry level shall be maintained within 12 inches of the top of the drilled hole.

A log of concrete placement for each drilled hole shall be maintained by the Contractor when concrete is deposited under slurry. The log shall show the pile location, tip elevation, dates of excavation and concrete placement, total quantity of concrete deposited, length and tip elevation of any casing, and details of any hole stabilization method and materials used. The log shall include a 8-1/2" x 11" sized graph of the concrete placed versus depth of hole filled. The graph shall be plotted continuously throughout placing of concrete. The depth of drilled hole filled shall be plotted vertically with the pile tip oriented at the bottom and the quantity of concrete shall be plotted horizontally. Readings shall be made at least at each 5 feet of pile depth, and the time of

the reading shall be indicated. The graph shall be labeled with the pile location, tip elevation, cutoff elevation, and the dates of excavation and concrete placement. The log shall be delivered to the Engineer within one working day of completion of placing concrete in the pile.

After placing reinforcement and prior to placing concrete in the drilled hole, if drill cuttings settle out of the slurry, the bottom of the drilled hole shall be cleaned. The Contractor shall verify that the bottom of the drilled hole is clean.

If temporary casing is used, concrete placed under slurry shall be maintained at a level at least 5 feet above the bottom of the casing. The withdrawal of casings shall not cause contamination of the concrete with slurry.

Material resulting from using slurry shall be disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

## Acceptance Testing and Mitigation

Vertical inspection pipes for acceptance testing shall be provided in all cast-in-drilled-hole concrete piles that are 24 inches in diameter or larger, except when the holes are dry or when the holes are dewatered without the use of temporary casing to control ground water.

Inspection pipes shall be Schedule 40 polyvinyl chloride pipes with a nominal inside diameter of 2 inches. Each inspection pipe shall be capped top and bottom and shall have watertight couplers to provide a clean, dry and unobstructed 2-inch-diameter clear opening from 3 feet above the pile cutoff down to the bottom of the reinforcing cage.

If the Contractor drills the hole below the specified tip elevation, the reinforcement and the inspection pipes shall be extended to 3 inches clear of the bottom of the drilled hole.

Inspection pipes shall be placed around the pile, inside the outermost spiral or hoop reinforcement, and 3 inches clear of the vertical reinforcement, at a uniform spacing not exceeding 2 feet 9 inches measured along the circle passing through the centers of inspection pipes. A minimum of 2 inspection pipes per pile shall be used. When the vertical reinforcement is not bundled and each bar is not more than one inch in diameter, inspection pipes may be placed 2 inches clear of the vertical reinforcement. The inspection pipes shall be placed to provide the maximum diameter circle that passes through the centers of the inspection pipes while maintaining the clear spacing required herein. The pipes shall be installed in straight alignment, parallel to the main reinforcement, and securely fastened in place to prevent misalignment during installation of the reinforcement and placing of concrete in the hole.

The Contractor shall log the location of the inspection pipe couplers with respect to the plane of pile cut off, and these logs shall be delivered to the Engineer upon completion of the placement of concrete in the drilled hole.

After placing concrete and before requesting acceptance tests, each inspection pipe shall be tested by the Contractor in the presence of the Engineer by passing a 1.9-inch-diameter rigid cylinder 2 feet long through the complete length of pipe. If the 1.9-inch-diameter rigid cylinder fails to pass any of the inspection pipes, the Contractor shall attempt to pass a 1-1/4-inch-diameter rigid cylinder 4.5 feet long through the complete length of those pipes in the presence of the Engineer. If an inspection pipe fails to pass the 1-1/4-inch-diameter cylinder, the Contractor shall immediately fill all inspection pipes in the pile with water.

The Contractor shall replace each inspection pipe that does not pass the 1-1/4-inch-diameter cylinder with a 2-inch-diameter hole cored through the concrete for the entire length of the pile. Cored holes shall be located as close as possible to the inspection pipes they are replacing and shall be no more than 6 inches inside the reinforcement. Coring shall not damage the pile reinforcement. Cored holes shall be made with a double wall core barrel system utilizing a split tube type inner barrel. Coring with a solid type inner barrel will not be allowed. Coring methods and equipment shall provide intact cores for the entire length of the pile concrete. The coring operation shall be logged by an Engineering Geologist or Civil Engineer licensed in the State of California and experienced in core logging. Coring logs shall include complete descriptions of inclusions and voids encountered during coring, and shall be delivered to the Engineer upon completion. Concrete cores shall be preserved, identified with the exact location the core was recovered from within the pile, and made available for inspection by the Engineer.

Acceptance tests of the concrete will be made by the Engineer, without cost to the Contractor. Acceptance tests will evaluate the homogeneity of the placed concrete. Tests will include gamma-gamma logging. Tests may also include crosshole sonic logging and other means of inspection selected by the Engineer. The Contractor shall not conduct operations within 25 feet of the gamma-gamma logging operations. The Contractor shall separate reinforcing steel as necessary to allow the Engineer access to the inspection pipes to perform gamma-gamma logging or other acceptance testing. After requesting acceptance tests and providing access to the piling, the Contractor shall allow 25 days for the Engineer to conduct these tests and make determination of acceptance if the 1.9-inch-diameter cylinder passed all inspection pipes, and 30 days if only the 1-1/4-inch-diameter cylinder passed all inspection pipes. Should the Engineer fail to complete these tests within the time allowance, and if in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in inspection, the delay will be considered a right of way delay as specified in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

All inspection pipes and cored holes in a pile shall be dewatered and filled with grout after notification by the Engineer that the pile is acceptable. Placement and removal of

water in the inspection pipes shall be at the Contractor's expense. Grout shall conform to the provisions in Section 50-1.09, "Bonding and Grouting," of the Standard Specifications. The inspection pipes and holes shall be filled using grout tubes that extend to the bottom of the pipe or hole or into the grout already placed.

If acceptance testing performed by the Engineer determines that a pile does not meet the requirements of the specifications, then that pile will be rejected and all depositing of concrete under slurry or concrete placed using temporary casing for the purpose of controlling groundwater shall be suspended until written changes to the methods of pile construction are approved in writing by the Engineer.

The Contractor shall submit to the Engineer for approval a mitigation plan for repair, supplementation, or replacement for each rejected cast-in-drilled-hole concrete pile, and this plan shall conform to the provisions in Section 5-1.02, "Plans and Working Drawings," of the Standard Specifications. Prior to submitting this mitigation plan, the Engineer will hold a repair feasibility meeting with the Contractor to discuss the feasibility of repairing rejected piling. The Engineer will consider the size of the defect, the location of the defect, and the design information and corrosion protection considerations for the pile. This information will be made available to the Contractor, if appropriate, for the development of the mitigation plan. If the Engineer determines that it is not feasible to repair the rejected pile, the Contractor shall not include repair as a means of mitigation and shall proceed with the submittal of a mitigation plan for replacement or supplementation of the rejected pile.

If the Engineer determines that a rejected pile does not require mitigation due to structural, geotechnical, or corrosion concerns, the Contractor may elect to 1) repair the pile per the approved mitigation plan, or 2) not repair anomalies found during acceptance testing of that pile. For such unrepaired piles, the Contractor shall pay to the State, $300 per cubic yard for the portion of the pile affected by the anomalies. The volume, in cubic yards, of the portion of the pile affected by the anomalies, shall be calculated as the area of the cross section of the pile affected by each anomaly, in square yards, as determined by the Engineer, multiplied by the distance, in yards, from the top of each anomaly to the specified tip of the pile. If the volume calculated for one anomaly overlaps the volume calculated for additional anomalies within the pile, the calculated volume for the overlap shall only be counted once. In no case shall the amount of the payment to the State for any such pile be less than $300. The Department may deduct the amount from any moneys due, or that may become due the Contractor under the contract.

Pile mitigation plans shall include the following:

A. The designation and location of the pile addressed by the mitigation plan.
B. A review of the structural, geotechnical, and corrosion design requirements of the rejected pile.
C. A step by step description of the mitigation work to be performed, including drawings if necessary.

D. An assessment of how the proposed mitigation work will address the structural, geotechnical, and corrosion design requirements of the rejected pile.
E. Methods for preservation or restoration of existing earthen materials.
F. A list of affected facilities, if any, with methods and equipment for protection of these facilities during mitigation.
G. The State assigned contract number, bridge number, full name of the structure as shown on the contract plans, District-County-Route-Post Mile, and the Contractor's (and Subcontractor's if applicable) name on each sheet.
H. A list of materials, with quantity estimates, and personnel, with qualifications, to be used to perform the mitigation work.
I. The seal and signature of an engineer who is licensed as a Civil Engineer by the State of California.

For rejected piles to be repaired, the Contractor shall submit a pile mitigation plan that contains the following additional information:

A. An assessment of the nature and size of the anomalies in the rejected pile.
B. Provisions for access for additional pile testing if required by the Engineer.

For rejected piles to be replaced or supplemented, the Contractor shall submit a pile mitigation plan that contains the following additional information:

A. The proposed location and size of additional piling.
B. Structural details and calculations for any modification to the structure to accommodate the replacement or supplemental piling.

All provisions for cast-in-drilled-hole concrete piling shall apply to replacement piling. The Contractor shall allow the Engineer 10 days to review the mitigation plan after a complete submittal has been received.

Should the Engineer fail to review the complete pile mitigation submittal within the time specified, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the delay in reviewing the pile mitigation plan, an extension of time commensurate with the delay in completion of the work thus caused will be granted in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

When repairs are performed, the Contractor shall submit a mitigation report to the Engineer within 10 days of completion of the repair. This report shall state exactly what repair work was performed and quantify the success of the repairs relative to the submitted mitigation plan. The mitigation report shall be stamped and signed by an engineer that is licensed as a Civil Engineer by the State of California. The mitigation report shall show the State assigned contract number, bridge number, full name of the structure as shown on the contract plans, District-County-Route-Post Mile, and the Contractor (and subcontractor if applicable) name on each sheet. The Engineer will be the sole judge as to whether a mitigation proposal is acceptable, the mitigation efforts are

successful, and to whether additional repairs, removal and replacement, or construction of a supplemental foundation is required.

## MEASUREMENT AND PAYMENT (PILING)

Measurement and payment for the various types and classes of piles shall conform to the provisions in Sections 49-6.01, "Measurement," and 49-6.02, "Payment," of the Standard Specifications and these special provisions.

Payment for cast-in-place concrete piling shall conform to the provisions in Section 49-6.02, "Payment," of the Standard Specifications and these special provisions except that, full compensation for reinforcement in the piling will be paid for part of cast-in-drilled hole concrete piling.

Full compensation for slurry, depositing concrete under slurry, test batches, inspection pipes, filling inspection holes and pipes with grout, drilling oversized cast-in-drilled-hole concrete piling, filling cave-ins and oversized piles with concrete, and redrilling through concrete, shall be considered as included in the contract prices paid per linear foot for cast-in-drilled-hole concrete piling of the types and sizes listed in the Engineer's Estimate, and no additional compensation will be allowed therefor.

The contract price paid per foot for cast-in-drilled hole concrete piling shall include full compensation for furnishing all labor, materials including bar reinforcing steel, tools, equipment and incidentals and for doing all the work involved in furnishing the temporary steel casing and the filling materials for cast-in-place concrete piles, constructing reinforced concrete extensions, splicing piles and furnishing and installing pile anchors and lugs, as shown on the plans, and as specified in these specifications and the special provisions, and as directed by the Engineer.

# SECTION 04750 CONCRETE STRUCTURES

Portland cement concrete structures shall conform to the provisions in Section 51, "Concrete Structures," of the Standard Specifications and these special provisions.

Shotcrete shall not be used as an alternative construction method for reinforced concrete members unless otherwise specified.

## CONCRETE

Concrete shown on the plans that has a 28-day compressive strength of greater than 3,600 psi shall contain not less than 675 pounds of cementitious material per cubic yard. The concrete shall be considered to be designated by cementitious material content rather than by 28-day compressive strength.

The Contractor shall paint "Slippery When Wet" on the concrete in a visible location on the concrete footing at Bridge approach as directed by the Engineer.

## MEASUREMENT AND PAYMENT

Measurement and payment for concrete in structures shall conform to the provisions in Section 51-1.22, "Measurement," and Section 51-1.23, "Payment," of the Standard Specifications and these special provisions.

The unit price paid per cubic yard for structural concrete (bridge) shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in structural concrete (bridge), complete in place, as shown on the plans, and as specified in these specifications and the special provisions, and a directed by the Engineer, except as otherwise provided.

Full compensation for furnishing and installing concrete footing at bridge approach shall be considered as included in the contract lump sum price paid for stone veneer wing wall and no separate payment will be made therefore.

Concrete footing at bridge approach shall include full compensation for furnishing all labor, materials including concrete, bar reinforcing steel, dowels, tools, equipment and incidentals, and for doing all the work involved in constructing the concrete work, complete in place, as shown on the plans, and as specified in these specifications and the special provisions, and a directed by the Engineer, except as otherwise provided.

## SECTION 05000 BAR REINFORCEMENT STEEL

Reinforcement shall conform to the provisions in Section 52, "Reinforcement," of the Standard Specifications and these special provisions.

The Department's mechanical splices prequalified list can be found at:

http://www.dot.ca.gov/hq/esc/approved_products_list/

The provisions in "Welding Quality Control" of these special provisions shall not apply to resistance butt welding.

The contract price paid per pound for bar reinforcement steel shown on the plans shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals, and for doing all the work involved in furnishing and placing the bar reinforcing steel complete in place, as shown on the plans, and as specified in these specifications and the Special Provisions, and as directed by the Engineer.

## MEASUREMENT AND PAYMENT

Measurement and payment for bar reinforcement steel in structures shall conform to the provisions in Section 52-1.10, "Measurement," and Section 52-1.11, "Payment," of the Standard Specifications and these special provisions.

## SECTION 05250 FURNISH STEEL TRUSS

Construction of steel structures shall conform to the provisions in Section 55, "Steel Structures," of the Standard Specifications and these special provisions.

Attention is directed to "Welding" in Section 8, "Materials," of these special provisions.

## MATERIALS

## ROTATIONAL CAPACITY TESTING PRIOR TO SHIPMENT TO JOB SITE

Rotational capacity tests shall be performed on all lots of high-strength fastener assemblies prior to shipment of these lots to the project site. Zinc-coated assemblies shall be tested after all fabrication, coating, and lubrication of components has been completed. One hardened washer shall be used under each nut for the tests.

The requirements of this section do not apply to high-strength cap screws or high-strength bolts used for slip base plates.

Each combination of bolt production lot, nut lot, and washer lot shall be tested as an assembly.

A rotational capacity lot number shall be assigned to each combination of lots tested. Each shipping unit of fastener assemblies shall be plainly marked with the rotational capacity lot number.

Two fastener assemblies from each rotational capacity lot shall be tested.

The following equipment, procedure, and acceptance criteria shall be used to perform rotational capacity tests on and determine acceptance of long bolts. Fasteners are considered to be long bolts when full nut thread engagement can be achieved when installed in a bolt tension measuring device:

A. Long Bolt Test Equipment:

1. Calibrated bolt tension measuring device with adequate tension capacity for the bolts being tested.

2. Calibrated dial or digital torque wrench. Other suitable tools will be required for performing Steps 7 and 8 of the Long Bolt Test Procedure. A torque multiplier may be required for large diameter bolts.
3. Spacer washers or bushings. When spacer washers or bushings are required, they shall have the same inside diameter and equal or larger outside diameter as the appropriate hardened washers conforming to the requirements in ASTM Designation: F 436.
4. Steel beam or member, such as a girder flange or cross frame, to which the bolt tension measuring device will be attached. The device shall be accessible from the ground.

B Long Bolt Test Procedure:

1. Measure the bolt length. The bolt length is defined as the distance from the end of the threaded portion of the shank to the underside of the bolt head.
2. Install the nut on the bolt so that 3 to 5 full threads of the bolt are located between the bearing face of the nut and the underside of the bolt head. Measure and record the thread stickout of the bolt. Thread stickout is determined by measuring the distance from the outer face of the nut to the end of the threaded portion of the shank.
3. Insert the bolt into the bolt tension measuring device and install the required number of washers, and additional spacers as needed, directly beneath the nut to produce the thread stickout measured in Step 2 of this procedure.
4. Tighten the nut using a hand wrench to a snug-tight condition. The snug tension shall not be less than the Table A value but may exceed the Table A value by a maximum of 2 kips.

Table A

| High-Strength Fastener Assembly Tension Values to Approximate Snug-Tight Condition | |
|---|---|
| Bolt Diameter (inches) | Snug Tension (kips) |
| 1/2 | 1 |
| 5/8 | 2 |
| 3/4 | 3 |
| 7/8 | 4 |
| 1 | 5 |
| 1-1/8 | 6 |
| 1-1/4 | 7 |
| 1-3/8 | 9 |
| 1-1/2 | 10 |

5. Match-mark the assembly by placing a heavy reference start line on the face plate of the bolt tension measuring device which aligns with (1) a mark placed on one corner of the nut and (2) a radial line placed across the flat on the end of the bolt or on the exposed portions of the threads of tension control bolts. Place an additional mark on the outside of the socket that overlays the mark on the nut corner such that this mark will be visible while turning the nut. Make an additional mark on the face plate, either 2/3 of a turn, one turn, or

1-1/3 turn clockwise from the heavy reference start line, depending on the bolt length being tested as shown in Table B.

Table B

| Required Nut Rotation for Rotational Capacity Tests[a] [b] | |
|---|---|
| Bolt Length (measured in Step 1) | Required Rotation (turn) |
| 4 bolt diameters or less | 2/3 |
| Greater than 4 bolt diameters but no more than 8 bolt diameters | 1 |
| Greater than 8 bolt diameters, but no more than 12 bolt diameters[c] | 1-1/3 |

(a) Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance shall be plus or minus 30 degrees; for bolts installed by 2/3 turn and more, the tolerance shall be plus or minus 45 degrees.
(b) Applicable only to connections in which all material within grip of the bolt is steel.
(c) When bolt length exceeds 12 diameters, the required rotation shall be determined by actual tests in a suitable tension device simulating the actual conditions.

6. Turn the nut to achieve the applicable minimum bolt tension value listed in Table C. After reaching this tension, record the moving torque, in foot-pounds, required to turn the nut, and also record the corresponding bolt tension value in pounds. Torque shall be measured with the nut in motion. Calculate the value, T, where T = [(the measured tension in pounds) x (the bolt diameter in inches) / 48].

Table C

| Minimum Tension Values for High-Strength Fastener Assemblies | |
|---|---|
| Bolt Diameter (inches) | Minimum Tension (kips) |
| 1/2 | 12 |
| 5/8 | 19 |
| 3/4 | 28 |
| 7/8 | 39 |
| 1 | 51 |
| 1-1/8 | 56 |
| 1-1/4 | 71 |
| 1-3/8 | 85 |
| 1-1/2 | 103 |

7. Turn the nut further to increase bolt tension until the rotation listed in Table B is reached. The rotation is measured from the heavy reference line made on the face plate after the bolt was snug-tight. Record this bolt tension.
8. Loosen and remove the nut and examine the threads on both the nut and bolt.

C. Long Bolt Acceptance Criteria:

1. An assembly shall pass the following requirements to be acceptable: (1) the measured moving torque (Step 6) shall be less than or equal to the calculated value, T (Step 6), (2) the bolt tension measured in Step 7 shall be greater than or equal to the applicable turn test tension value listed in Table D, (3) the nut shall be able to be removed from the bolt without signs of thread stripping or

galling after the required rotation in Step 7 has been achieved, (4) the bolt does not shear from torsion or fail during the test, and (5) the assembly does not seize before the final rotation in Step 7 is reached. Elongation of the bolt in the threaded region between the bearing face of the nut and the underside of the bolt head is expected and will not be considered a failure. Both fastener assemblies tested from one rotational capacity lot shall pass for the rotational capacity lot to be acceptable.

Table D

| Turn Test Tension Values | |
|---|---|
| Bolt Diameter (inches) | Turn Test Tension (kips) |
| 1/2 | 14 |
| 5/8 | 22 |
| 3/4 | 32 |
| 7/8 | 45 |
| 1 | 59 |
| 1-1/8 | 64 |
| 1-1/4 | 82 |
| 1-3/8 | 98 |
| 1-1/2 | 118 |

The following equipment, procedure, and acceptance criteria shall be used to perform rotational capacity tests on and determine acceptance of short bolts. Fasteners are considered to be short bolts when full nut thread engagement cannot be achieved when installed in a bolt tension measuring device:

A. Short Bolt Test Equipment:

1. Calibrated dial or digital torque wrench. Other suitable tools will be required for performing Steps 7 and 8 of the Short Bolt Test Procedure. A torque multiplier may be required for large diameter bolts.
2. Spud wrench or equivalent.
3. Spacer washers or bushings. When spacer washers or bushings are required, they shall have the same inside diameter and equal or larger outside diameter as the appropriate hardened washers conforming to the requirements in ASTM Designation: F 436.
4. Steel plate or girder with a hole to install bolt. The hole size shall be 1/16 inch greater than the nominal diameter of the bolt to be tested. The grip length, including any plates, washers, and additional spacers as needed, shall provide the proper number of threads within the grip, as required in Step 2 of the Short Bolt Test Procedure.

B. Short Bolt Test Procedure:

1. Measure the bolt length. The bolt length is defined as the distance from the end of the threaded portion of the shank to the underside of the bolt head.

2. Install the nut on the bolt so that 3 to 5 full threads of the bolt are located between the bearing face of the nut and the underside of the bolt head. Measure and record the thread stickout of the bolt. Thread stickout is determined by measuring the distance from the outer face of the nut to the end of the threaded portion of the shank.
3. Install the bolt into a hole on the plate or girder and install the required number of washers and additional spacers as needed between the bearing face of the nut and the underside of the bolt head to produce the thread stickout measured in Step 2 of this procedure.
4. Tighten the nut using a hand wrench to a snug-tight condition. The snug condition shall be the full manual effort applied to the end of a 12-inch long wrench. This applied torque shall not exceed 20 percent of the maximum allowable torque in Table E.

Table E

| Maximum Allowable Torque for High-Strength Fastener Assemblies | |
|---|---|
| Bolt Diameter (inches) | Torque (ft-lb) |
| 1/2 | 145 |
| 5/8 | 285 |
| 3/4 | 500 |
| 7/8 | 820 |
| 1 | 1220 |
| 1-1/8 | 1500 |
| 1-1/4 | 2130 |
| 1-3/8 | 2800 |
| 1-1/2 | 3700 |

5. Match-mark the assembly by placing a heavy reference start line on the steel plate or girder which aligns with (1) a mark placed on one corner of the nut and (2) a radial line placed across the flat on the end of the bolt or on the exposed portions of the threads of tension control bolts. Place an additional mark on the outside of the socket that overlays the mark on the nut corner such that this mark will be visible while turning the nut. Make 2 additional small marks on the steel plate or girder, one 1/3 of a turn and one 2/3 of a turn clockwise from the heavy reference start line on the steel plate or girder.
6. Using the torque wrench, tighten the nut to the rotation value listed in Table F. The rotation is measured from the heavy reference line described in Step 5 made after the bolt was snug-tight. A second wrench shall be used to prevent rotation of the bolt head during tightening. Measure and record the moving torque after this rotation has been reached. The torque shall be measured with the nut in motion.

Table F

| Nut Rotation Required for Turn-of-Nut Installation[a] [,b] | |
|---|---|
| Bolt Length (measured in Step 1) | Required Rotation (turn) |
| 4 bolt diameters or less | 1/3 |

(a) Nut rotation is relative to bolt, regardless of the element (nut or bolt) being turned. For bolts installed by 1/2 turn and less, the tolerance shall be plus or minus 30 degrees.
(b) Applicable only to connections in which all material within grip of the bolt is steel.

7. Tighten the nut further to the 2/3-turn mark as indicated in Table G. The rotation is measured from the heavy reference start line made on the plate or girder when the bolt was snug-tight. Verify that the radial line on the bolt end or on the exposed portions of the threads of tension control bolts is still in alignment with the start line.

Table G

| Required Nut Rotation for Rotational Capacity Test | |
|---|---|
| Bolt Length (measured in Step 1) | Required Rotation (turn) |
| 4 bolt diameters or less | 2/3 |

8. Loosen and remove the nut and examine the threads on both the nut and bolt.

C. Short Bolt Acceptance Criteria:

1. An assembly shall pass the following requirements to be acceptable: (1) the measured moving torque from Step 6 shall be less than or equal to the maximum allowable torque from Table E, (2) the nut shall be able to be removed from the bolt without signs of thread stripping or galling after the required rotation in Step 7 has been achieved, (3) the bolt does not shear from torsion or fail during the test, and (4) the assembly shall not seize before the final rotation in Step 7 is reached. Elongation of the bolt in the threaded region between the bearing face of the nut and the underside of the bolt head will not be considered a failure. Both fastener assemblies tested from one rotational capacity lot shall pass for the rotational capacity lot to be acceptable.

## INSTALLATION TENSION TESTING AND ROTATIONAL CAPACITY TESTING AFTER ARRIVAL ON THE JOB SITE

Installation tension tests and rotational capacity tests on high-strength fastener assemblies shall be performed by the Contractor prior to acceptance or installation and after arrival of the fastener assemblies on the project site. Installation tension tests and rotational capacity tests shall be performed at the job site, in the presence of the Engineer, on each rotational capacity lot of fastener assemblies.

The requirements of this section do not apply to high-strength cap screws or high-strength bolts used for slip base plates.

Installation tension tests shall be performed on 3 representative fastener assemblies in conformance with the provisions in Section 8, "Installation," of the RCSC Specification. For short bolts, Section 8.2, "Pretensioned Joints," of the RCSC Specification shall be replaced by the "Pre-Installation Testing Procedures," of the "Structural Bolting Handbook," published by the Steel Structures Technology Center, Incorporated.

The rotational capacity tests shall be performed in conformance with the requirements for rotational capacity tests in "Rotational Capacity Testing Prior to Shipment to Job Site" of these special provisions.

At the Contractor's expense, additional installation tension tests, tests required to determine job inspecting torque, and rotational capacity tests shall be performed by the Contractor on each rotational capacity lot, in the presence of the Engineer, if:

1. Any fastener is not used within 3 months after arrival on the job site,
2. Fasteners are improperly handled, stored, or subjected to inclement weather prior to final tightening,
3. Significant changes are noted in original surface condition of threads, washers, or nut lubricant, or
4. The Contractor's required inspection is not performed within 48 hours after all fasteners in a joint have been tensioned.

Failure of a job-site installation tension test or a rotational capacity test will be cause for rejection of unused fasteners that are part of the rotational capacity lot.
When direct tension indicators are used, installation verification tests shall be performed in conformance with Appendix Section X1.4 of ASTM Designation: F 959, except that bolts shall be initially tensioned to a value 5 percent greater than the minimum required bolt tension.

## SURFACE PREPARATION

For all bolted connections, the new contact surfaces and inside surfaces of bolt holes shall be cleaned and coated before assembly in conformance with the provisions for cleaning and painting structural steel of these special provisions.

When zinc-coated tension control bolts are used, the sheared end of each fastener shall be completely sealed with non-silicone type sealing compound conforming to the provisions in Federal Specification TT-S-230, Type II. The sealant shall be gray in color and shall have a minimum thickness of 50 mils. The sealant shall be applied to a clean sheared surface on the same day that the splined end is sheared off.

## WELDING

Table 2.2 of AWS D1.5 is superseded by the following table:

| Base Metal Thickness of the Thicker Part Joined, inches | Minimum Effective Partial Joint Penetration Groove Weld Size*, inches |
|---|---|
| Over 1/4 to 1/2 inclusive | 3/16 |
| Over 1/2 to 3/4 inclusive | 1/4 |
| Over 3/4 to 1-1/2 inclusive | 5/16 |
| Over 1-1/2 to 2-1/4 inclusive | 3/8 |
| Over 2-1/4 to 6 inclusive | 1/2 |
| Over 6 | 5/8 |

* Except the weld size need not exceed the thickness of the thinner part

Dimensional details and workmanship for welded joints in tubular and pipe connections shall conform to the provisions in Part A, "Common Requirements of Nontubular and Tubular Connections," and Part D, "Specific Requirements for Tubular Connections," in Section 2 of AWS D1.1.

The requirement of conformance with AWS D1.5 shall not apply to work conforming to Section 56-1, "Overhead Sign Structures," or Section 86-2.04, "Standards, Steel Pedestals and Posts," of the Standard Specifications.

**Clean and Paint Steel Truss**

New metal surfaces shall be cleaned and painted in conformance with the provisions in Section 59-2, "Painting Structural Steel," Section 59-3, "Painting Galvanized Surfaces," and Section 91, "Paint," of the Standard Specifications and these special provisions. Metal truss shall be painted Pantone #7475C (Mountain View Green). The contractor shall submit a color sample to the Engineer for approval prior to application of paint to truss. The Contractor shall be responsible for repairing paint on site, including any damage caused by construction activities or other causes.

Painted bridges shall be sand blasted in accordance with SSPC SPC-6.

The bridge shall be painted with an epoxy primer (TNEMEC #69 Epoxy Coatings) followed by an Aliphatic Urethane Gloss Enamel topcoat ("Series 74, by Tnemec) or approved equal. Bridges shall be provided with paint for touch up after erection.

**DECKING MATERIAL**

Bridge decking shall be Ipe from Brazilian growers who harvest under the guidelines and techniques of sustainable yield forestry management per section 10-2.06 Carpentry of these special provisions.

## ELASTOMERIC BEARING PADS

Elastomeric bearing pads shall conform to the provisions in Section 51-1.12H, "Elastomeric Bearing Pads," of the Standard Specifications and these special provisions.

Full compensation for installation of elastomeric bearing pads shall be considered as included in the contract lump sum price paid for furnish steel truss and no separate payment will be made therefor.

## MEASUREMENT AND PAYMENT

Full compensation for furnishing and installing timber decking for steel truss bridge shall be considered as included in the contract lump sum price paid for furnished steel truss and no separate payment will be made therefore.

Full compensation for clean and paint steel truss shall be considered as included in the contract unit price paid for furnish steel truss and no separate payment will be made therefor.

The contract lump sum price for furnish steel truss shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals including elastomeric bearing pads, and for doing all the work involved in furnishing structural steel, timber decking shipping to the project site as shown on the plans, as specified in the Standard Specifications and these Special Provisions, and as directed by the Engineer.

## SECTTION 05500 ERECT STEEL TRUSS

Erect Steel Truss shall conform to the applicable Provisions of Section 55-3.16 "Assembly" of the Standard Specifications, design plans and these special provisions.

Steel trusses shall be placed in the structure in conformance with the plans and special provisions for the structure to be constructed. Extreme care shall be exercised in handling, storing, moving and erecting steel trusses to avoid twisting, racking or other distortion that would result in cracking or damaging the steel trusses. Steel trusses shall be handled, transported and erected in an upright position and the points of support and directions of the reactions with respect to the truss shall be approximately the same as when the truss is in its final position.

It is the Contractor's responsibility to choose the most cost effective and appropriate method to select the number of segments of the steel truss and erect the steel trusses. It is Contractor's responsibility to acquire all permits required for construction from regulatory agencies including, but not limited to: SCVWD, PG&E and etc. depending on the method of erection of the steel trusses.

The Contractor shall perform all work involved in erect steel truss from the east side of Stevens Creek (opposite from the Open Space Park) as is feasible. Difficult truss erection is anticipated due to the presence of overhead high voltage power lines, existing trees and proximity of adjacent RODEO AND SARARTOGA Creeks. The Contractor shall maintain equipment within the laydown area as designated on the plans, and as directed by the Engineer.

### MEASUREMENT AND PAYMENT

The contract price paid lump sum for erect steel truss shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the

work involved in erecting, acquiring permits for transporting and erecting steel truss, complete in place, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

## SECTION 05750 MISCELLANEOUS CONCRETE CONSTRUCTION

Minor Concrete construction shall conform to the provisions in Section 73, "Concrete Curbs and Sidewalks," of the Standard Specifications and these special provisions.

Miscellaneous concrete construction shall include curb, gutter, sidewalk, curb ramp, driveway , and drainage inlet.

Curb ramp detectable warning surface shall consist of raised truncated domes constructed or installed on curb ramps in conformance with the details shown on the plans and these special provisions. At the option of the Contractor, the detectable warning surface shall be prefabricated, cast-in-place, or stamped into the surface of the curb ramp. The color of the detectable warning surface shall be yellow conforming to Federal Standard 595B, Color No. 33538.

Prefabricated detectable warning surface shall be in conformance with the requirements established by the Department of General Services, Division of State Architect and be attached in conformance with the manufacturer's recommendations.

Cast-in-place and stamped detectable warning surfaces shall be painted in conformance with the provisions in Section 59-6, "Painting Concrete," of the Standard Specifications.

The finished surfaces of the detectable warning surface shall be free from blemishes.

Prior to constructing the cast-in-place or stamping the detectable warning surface, the Contractor shall demonstrate the ability to produce a detectable warning surface conforming to the details shown on the plans and these special provisions by constructing a 24" x 24" test panel.

The manufacturer shall provide a written 5-year warranty for prefabricated detectable warning surfaces, guaranteeing replacement when there is defect in the dome shape, color fastness, sound-on-cane acoustic quality, resilience, or attachment. The warranty period shall begin upon acceptance of the contract.

Drainage inlet shall conform to the provisions in Section 70, "Miscellaneous Facilities," of the Standard Specifications.

**MEASUREMENT AND PAYMENT**

The contract unit price paid per lineal foot for curb and gutter shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in constructing curb and gutter complete in place, including concrete and excavation as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract unit price paid per square foot for sidewalk shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in constructing sidewalk complete in place, including concrete and excavation as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract unit price paid per square foot for driveway shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in constructing driveway complete in place, including concrete and excavation as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The contract unit price paid per each for curb ramp shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in constructing curb ramp complete in place, including concrete and excavation as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

Full compensation for constructing or furnishing and installing curb ramp detectable warning surfaces shall be considered as included in the contract price paid per cubic yard for minor concrete (curb ramp) and no separate payment will be made therefor.

The contract unit price paid per each for inlet shall include full compensation for furnishing all labor, materials, tools, equipment and incidentals and for doing all the work involved in constructing inlet complete in place, including concrete and excavation as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

## SECTION 06000 MISCELLANEOUS IRON AND STEEL

Miscellaneous iron and steel shall conform to the provisions in Section 75, "Miscellaneous Metal," of the Standard Specifications and these special provisions.

# CITY OF SARATOGA

## GENERAL CONSTRUCTION SPECIFICATIONS

1. Construction work and operations shall conform to the prevailing State of California Standard Specifications 2006, supplemented by special provisions required by the City of Saratoga Engineer's Office. The performance and completion of all work must be to the satisfaction of the City Engineer.

2. Construction details shall be in accordance with provision of the current City of Saratoga Standard Details as appropriate. In the event of conflict, the matter shall be resolved by the City Engineer.

3. Contractor shall provide adequate dust control as required by the City Engineer.

4. Accurate verification as to size, location and depth of existing underground conduits or facilities shall be the individual contractors responsibility Plan locations are approximate and for general information only. Contractors shall contact utility companies for exact locations of utilities.

5. Concrete used for structural purposes shall be Class "A" (6 sack per c.y.) as specified in the State Standard Specifications. Concrete placed must develop a minimum strength factor of 2200 p.s.i. in a seven day period and 3000 p.s.i. in 28 days.

6. Portland Cement Concrete (P.C.C.) shall conform to Section 90 of the State of California Standard Specifications, May 2006 and shall be designated by class as follows:
7. Class A- 6 sack mix with a minimum compressive strength of 3000 p.s.i. at 28 days
8. Class B- 5 sack mix with a minimum compressive strength of 2500 p.s.i. at 28 days

9. All exposed concrete such as used in sidewalks, curb and gutters, etc., shall contain 1 pint of lampblack per cubic yard.

10. Asphalt concrete (A.C.) shall be Type B conforming to Section 39 of the State of California Standard Specifications, May 2006. Aggregate for asphaltic concrete shall be ½" maximum medium grade or as specifically approved by the City Engineer. Cross sections of A.C 4" or greater in thickness shall be placed in multiple lifts of not more than 4" thickness. ½" median, class B, Prime oil, SC70 Seal oil, SS1H.

11. Reinforced concrete pipe (R.C.P.) for storm drains shall conform to American Society for testing and Materials (A.S.T.M.) C76 and shall be Class II, III or Class IV as specified.

12. Street pavements shall be designed on the basis of the R-Value, Traffic Index method, as shown in the State of California, Division of Highway Planning Manual, Part 7. Minimum standard pavement sections are shown on Street Standard Drawings, No's. 16 to 21. These minimum standards may be used only where the design method does not require a thicker structural section.

13. Curb drop inlets on streets with a slope greater than 6% shall be designed for each particular location. Inlets on streets with a slope of 6% or less shall use the standard design shown on sheet 7 of the street standard drawings.

14. Weakened plane joints may be formed or saw cut but in any case must be to 1/3 of depth of the depth of the concrete section. Formed joints may be accomplished by inspection of a thin (1/4" or less in thickness) sheet of steel, plastic or other suitable material to the proper depth in work able concrete. This wedge should not be removed until the concrete has "set". The concrete on both sides of this wedge shall be finished with a ¼" radius edge.

15. Encroachment permits: Encroachment permits shall be secured from the Santa Clara County Flood Control and Water District in cases where needed. Encroachment permits shall be secured from Caltrans where needed.

16. Contractors or the Developer must notify the Public Works Department before beginning any of the activities listed below. Failure to do so may provide cause for rejection of the work done and the necessity for either; 1.) removing and redoing the work; 2.) special testing such as coring, etc. 3.) a long- term performance bond or 4.) all or any of the above. The critical stages include:

    a. Commencement of work
    b. Beginning cut or fill
    c. Completion of excavation and/or subgrade
    d. Placement of aggregate base rock
    e. Application of prime coat or track coat
    f. Placement of Portland cement concrete in any structure
    g. Placement of asphalt concrete or other roadway material
    h. Completion of any drainage structure
    i. Backfill of any trench
    j. Placement of any structure or roadway over a backfill trench
    k. Completion of a project

17. The city requires a minimum of 24 hours advance notice for general inspection, 48 hours for asphalt concrete construction.

18. The Contractor and/or his authorized representative must submit written request for final inspection and acceptance. Such requests shall be directed to the City of Saratoga Engineering Dept., 13777 Fruitvale Avenue, Saratoga.

19. Routes used by construction traffic to be approved by City Engineer.

20. Field Engineer: Contractors or their engineer shall designate or provide a Field Engineer to act as a liaison with the contractors, subcontract and the City with regard to construction activities. Name(s) and phone number(s) of the individual(s) designated as Field Engineer shall be provided to the City and to all contractors and subcontractors working on the job. All questions as to the meaning and intent of the plans should be taken to the Field Engineer.

Construction work and operations shall conform to the prevailing State of California Standard Specifications 2006, supplemented by special provisions required by the City of Saratoga Engineer's Office. The performance and completion of all work must be to the satisfaction of the City Engineer.

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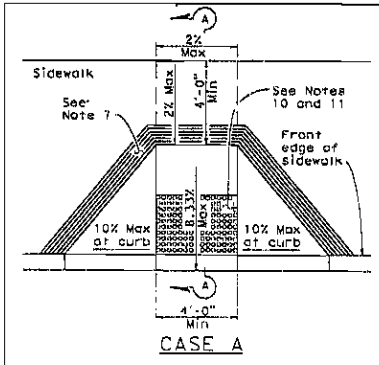
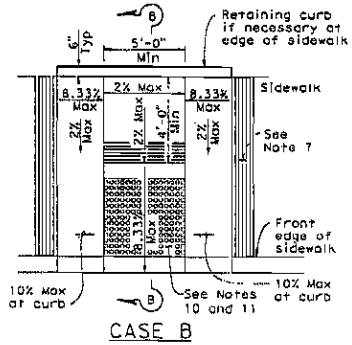
END OF SECTION: CITY OF SARATOGA DETAILS GENERAL CONSTRUCTION SPECIFICATIONS

# APPENDIX A

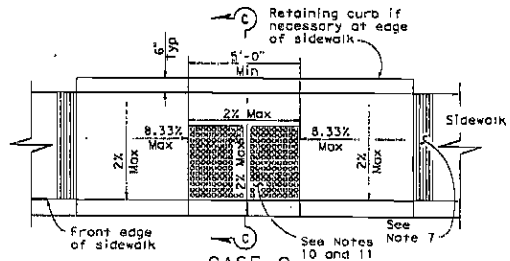
# CONSTRUCTION DETAILS



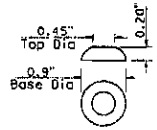

CASE A



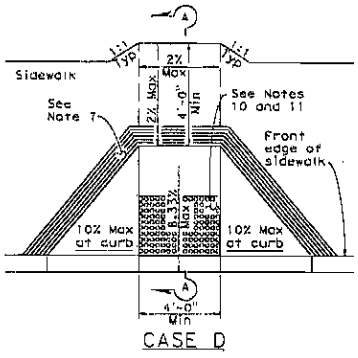

CASE B



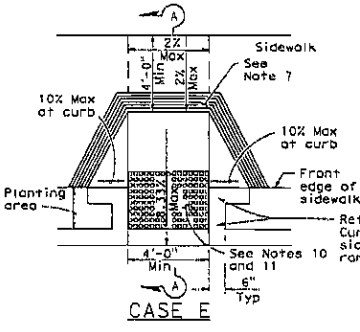

CASE C



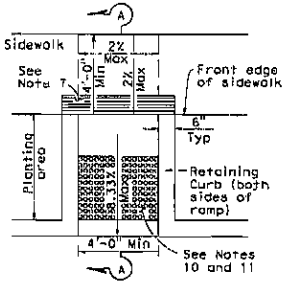

RAISED TRUNCATED DOME



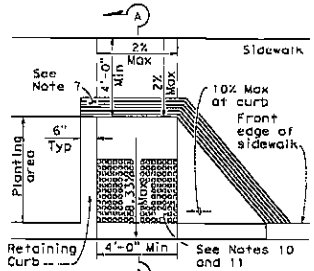

CASE D



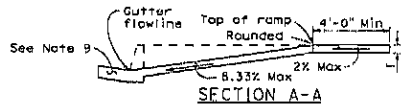

CASE E



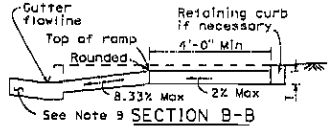

CASE F




CASE G
See Note 4

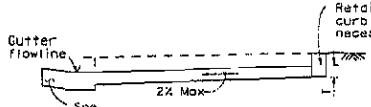



SECTION A-A

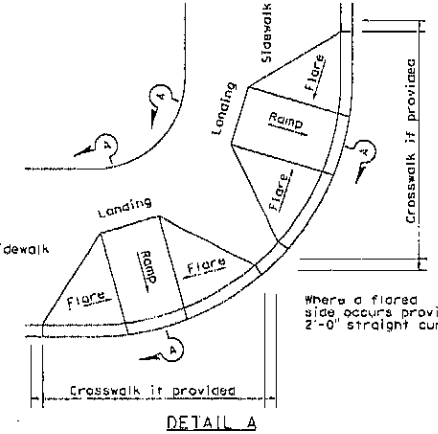



SECTION B-B

Depress entire sidewalk as required



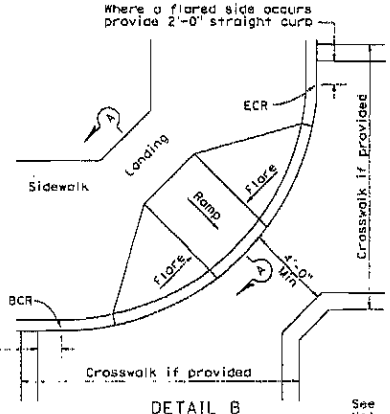

SECTION C-C




DETAIL A

TYPICAL TWO-RAMP CORNER INSTALLATION

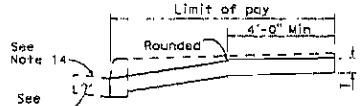
See Note 1




DETAIL B

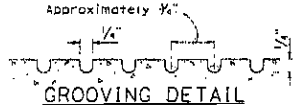
TYPICAL ONE-RAMP CORNER INSTALLATION

See Notes 1 and 3

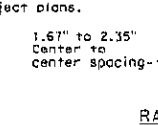



RETROFIT DETAIL

Existing curb and sidewalk




GROOVING DETAIL




RAISED TRUNCATED DOME PATTERN (IN-LINE)

DETECTABLE WARNING SURFACE

See Note 10

## NOTES:

1. As site conditions dictate, Case A through Case G curb ramps may be used for corner installations similar to those shown in Detail A and Detail B. The case of curb ramps used in Detail A do not have to be the same. Case A through Case G curb ramps also may be used at mid block locations, as site conditions dictate.
2. If distance from curb to back of sidewalk is too short to accommodate ramp and 4'-0" platform (landing) as shown in Case A, the sidewalk may be depressed longitudinally as in Case B, or C or may be widened as in Case D.
3. When ramp is located in center of curb return, crosswalk configuration must be similar to that shown for Detail B.
4. As site conditions dictate, the retaining curb side and the flared side of the Case G ramp shall be constructed in reversed position.
5. If located on a curve, the sides of the ramp need not be parallel, but the minimum width of the ramp shall be 4'-0".
6. Side slope of ramp flares vary uniformly from a maximum of 10% at curb to conform with longitudinal sidewalk slope adjacent to top of the ramp, except in Case C and Case F.
7. The curb ramp shall be outlined, as shown, with a 1'-0" wide border with ¼" grooves approximately ¾" on center. See grooving detail.
8. Transitions from ramps and landing to walks, gutters or streets shall be flush and free of abrupt changes.
9. Maximum slopes of adjoining gutters, the road surface immediately adjacent to the curb ramp or accessible route shall not exceed 5 percent within 4'-0" of the top and bottom of the curb ramp.
10. Curb ramps shall have a detectable warning surface that extends the full width and 3'-0" depth of the ramp. Detectable Warning Surfaces shall conform to the details on this plan and the requirements in the Special Provisions.
11. The edge of the detectable warning surface nearest the street shall be between 6" and 8" from the gutter flowline.
12. Sidewalk and ramp thickness, "T", shall be 3½" minimum.
13. Utility pull boxes, manholes, vaults and all other utility facilities within the boundaries of the curb ramp will be relocated or adjusted to grade by the owner prior to, or in conjunction with, curb ramp construction.
14. For retrofit conditions, removal and replacement of curb apron will be at the Contractor's option, unless otherwise shown on project plans.

| DIST | COUNTY | ROUTE | POST MILES TOTAL | POST MILES PROJECT | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|---|
| | | | | | | |

H. David Cohen
REGISTERED CIVIL ENGINEER

May 1, 2006
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

Hector David Cohen C41957 3-31-08 REGISTERED PROFESSIONAL ENGINEER STATE OF CALIFORNIA

To get to the California web site, go to: http://www.dot.ca.gov

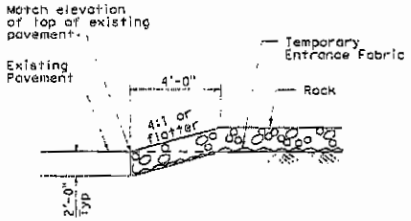
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# CURB RAMP DETAILS

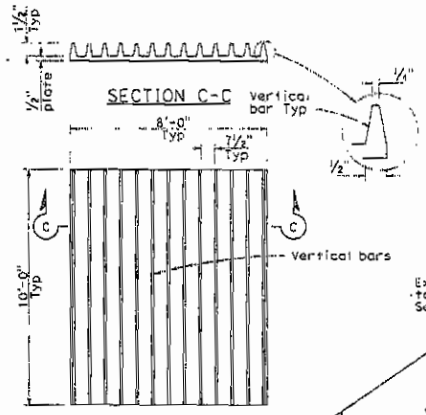
NO SCALE

A88A

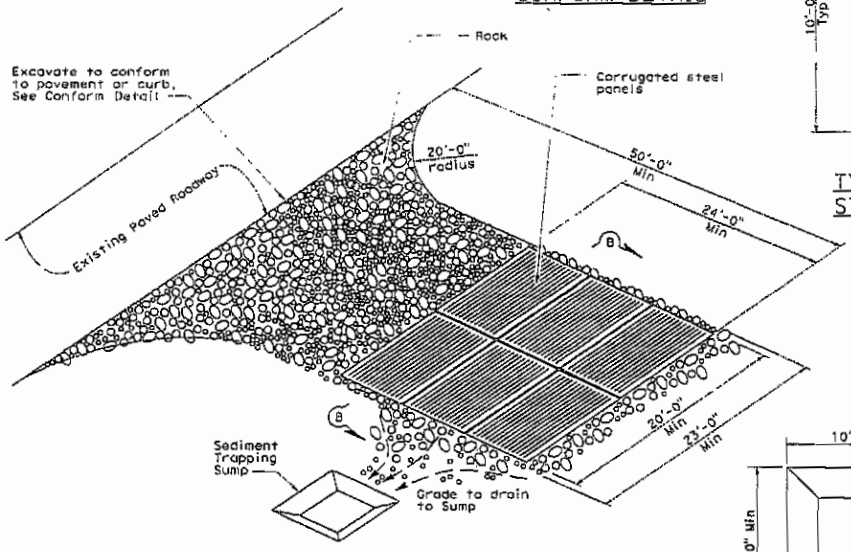
2006 STANDARD PLAN A88A



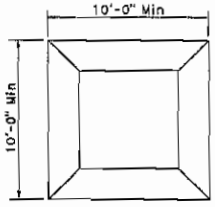

SECTION
CONFORM DETAIL



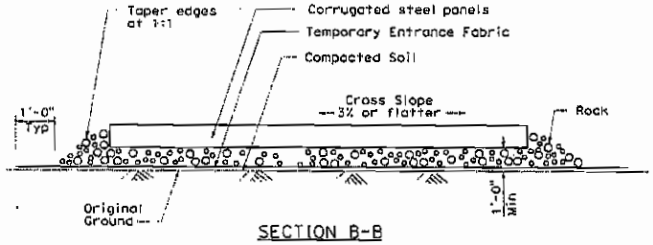

PLAN
TYPICAL CORRUGATED
STEEL PANEL DETAIL




PERSPECTIVE
TEMPORARY CONSTRUCTION ENTRANCE (TYPE 2)

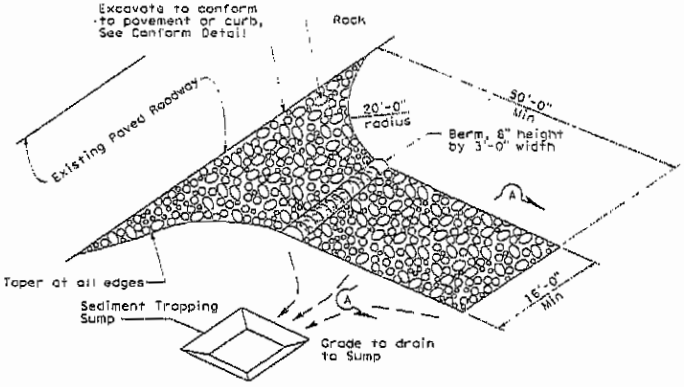



PLAN

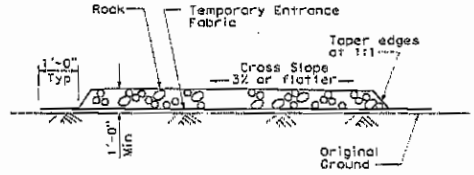



SECTION B-B


ELEVATION
SEDIMENT TRAPPING SUMP




PERSPECTIVE
TEMPORARY CONSTRUCTION ENTRANCE (TYPE 1)




SECTION A-A

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

# TEMPORARY WATER POLLUTION CONTROL DETAILS (TEMPORARY CONSTRUCTION ENTRANCE)

NO SCALE

T58

| DIST | COUNTY | ROUTE | POST MILES TOTAL PROJECT | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|---|---|
| | | | | | |

LICENSED LANDSCAPE ARCHITECT

May 1, 2006
PLANS APPROVAL DATE

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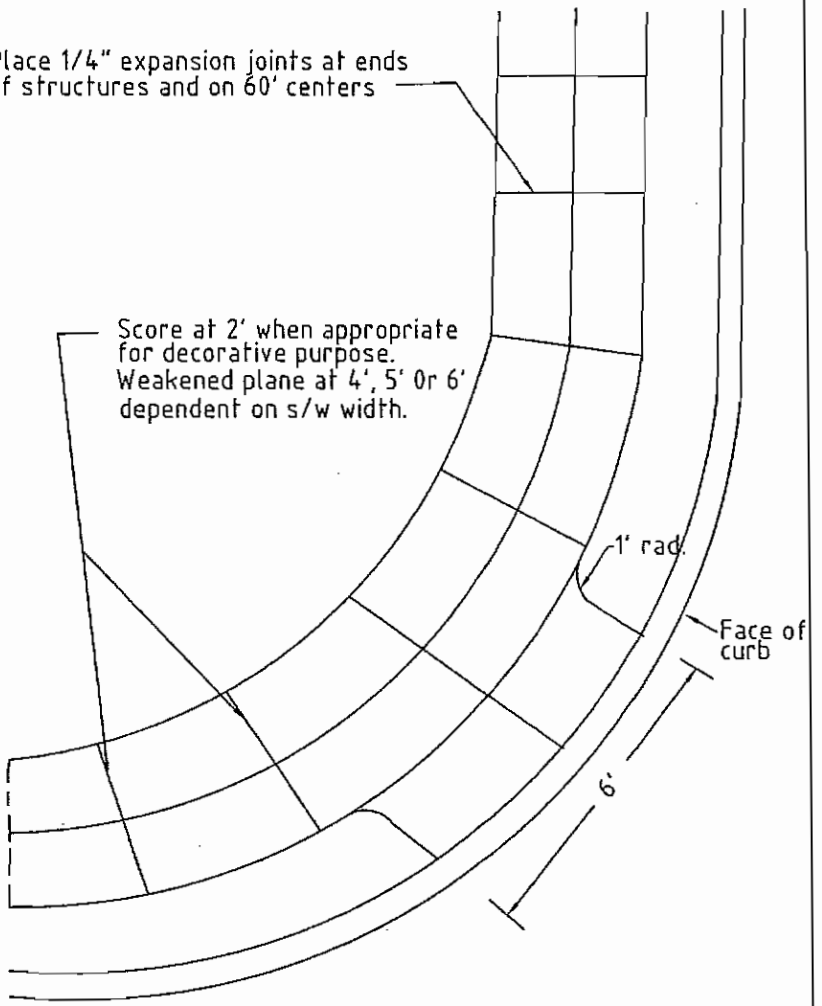
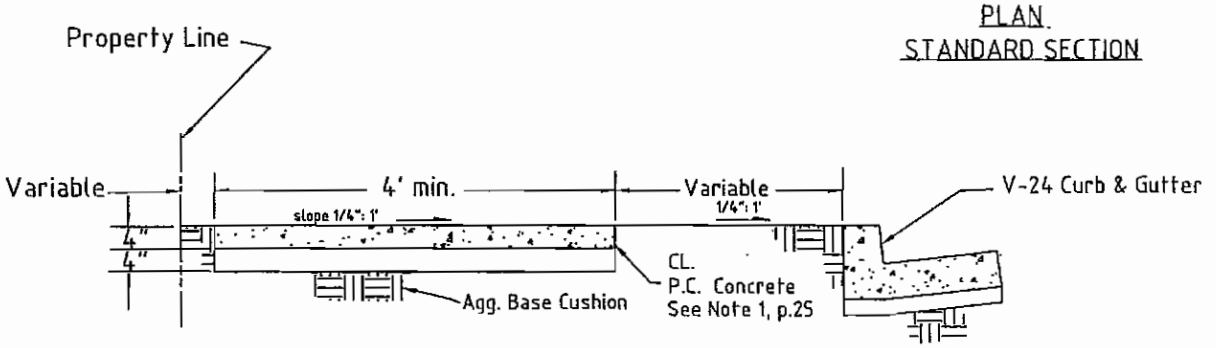
NOTES

1. Residential sidewalk shall be min. 4' wide, commercial 6' min. width in commercial and proffesional and administrative zones
2. Provide construction joints where curb and sidewalk abut
3. Wheel chair ramps to be located at either or both returns or center of corner as directed. See sheet 10 for ramp detail.
4. Weakened plane joints to be 1 1/2" deep min.

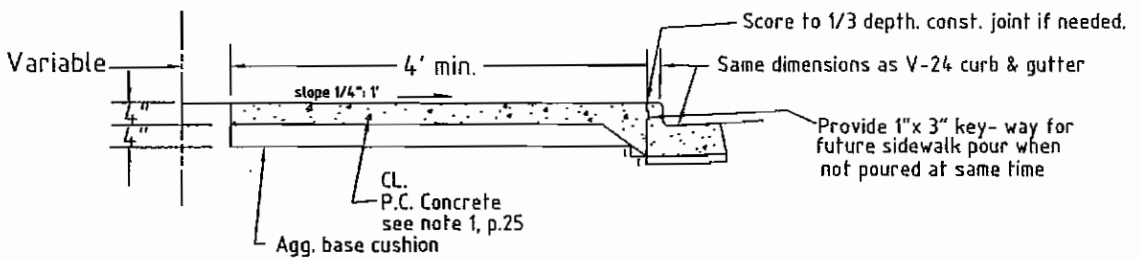



PLAN

STANDARD SECTION




STANDARD SECTION




MONOLITHIC SECTION

| Designed by | Approved by | Date | File name | Scale | Sheet 1 of 1 |
|---|---|---|---|---|---|
| E.N. | I.H. | JULY 2003 | | NO SCALE | |

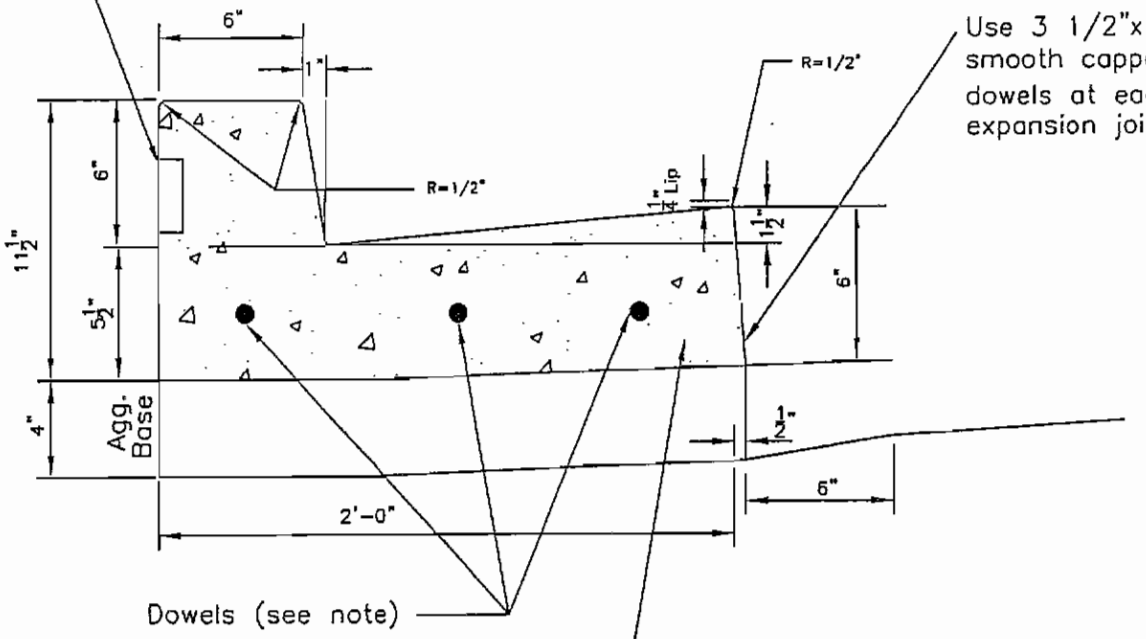
STANDARD DRAWING
STANDARD CONCRETE SIDEWALK

CITY OF SARATOGA

D:\MyDocuments\City_of_Saratoga\CAPITAL IMPROVEMENT PROJ

1"x3" keyway in back of curb where sidewalk or future sidewalk joins curb.

Use 1/2" expansion joint at each end of curb returns and at 60' centers.




Use 3 1/2"x12" smooth capped dowels at each expansion joint.

Dowels (see note)

Cl. B R C Concrete

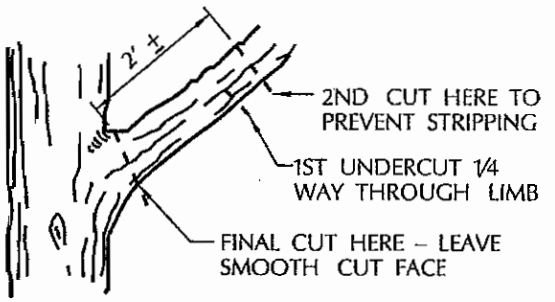
Note: Min. slope along gutter lines shall be 0.3%

Mark dummy joints 1" deep at 10' centers.

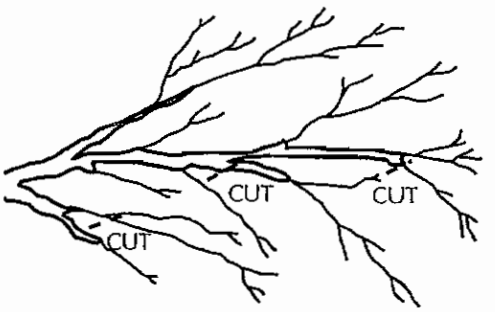
| Designed by | Approved by | Date | File name | Scale | Sheet 1 of 1 |
|---|---|---|---|---|---|
| E.N. | I.H. | JULY 2003 | | 1"=1'-6" | |

CITY OF SARATOGA

STANDARD DRAWING
STANDARD VERTICAL CURB & GUTTER (V-24)

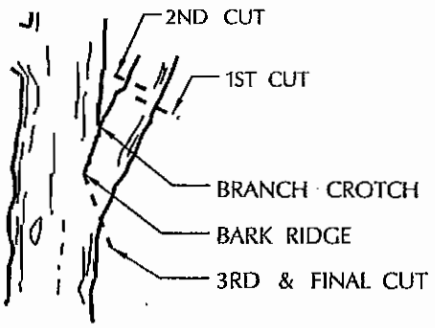



REMOVING LARGE LIMBS

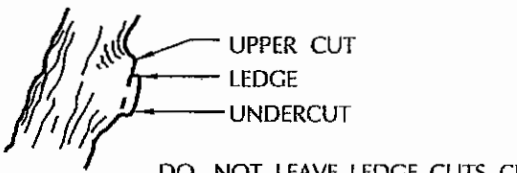



REMOVE UNDER LIMBS TO LIGHTEN HEAVY BRANCHES

METHOD TO BE USED IN TREE TRIMMING

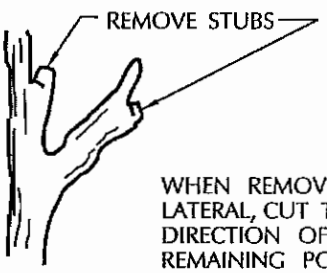



NARROW BRANCH CROTCH REMOVAL



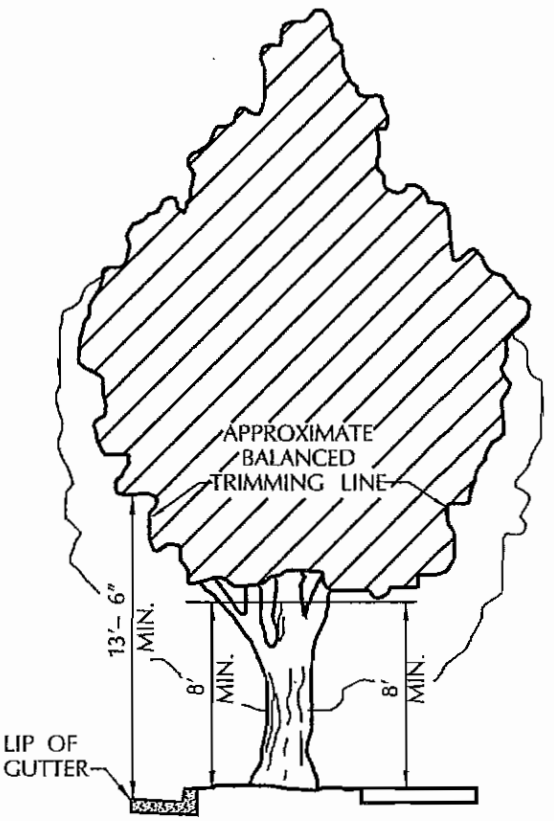

DO NOT LEAVE LEDGE CUTS, CUT ON DOTTED LINE TO MAKE A CLEAN UNION BETWEEN UPPER AND UNDER CUTS

LEDGE CUTS



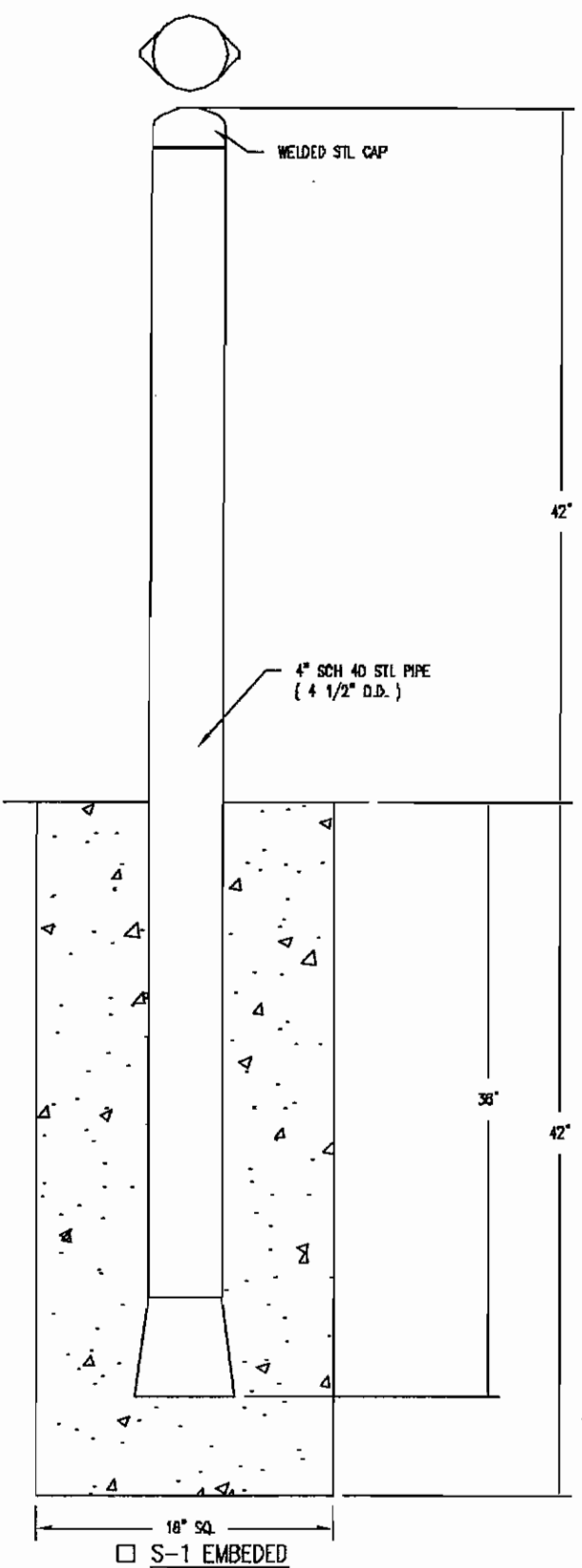

WHEN REMOVING LEADER OR LATERAL, CUT TO FOLLOW DIRECTION OF GROWTH OF REMAINING PORTION OF TREE

STUBS

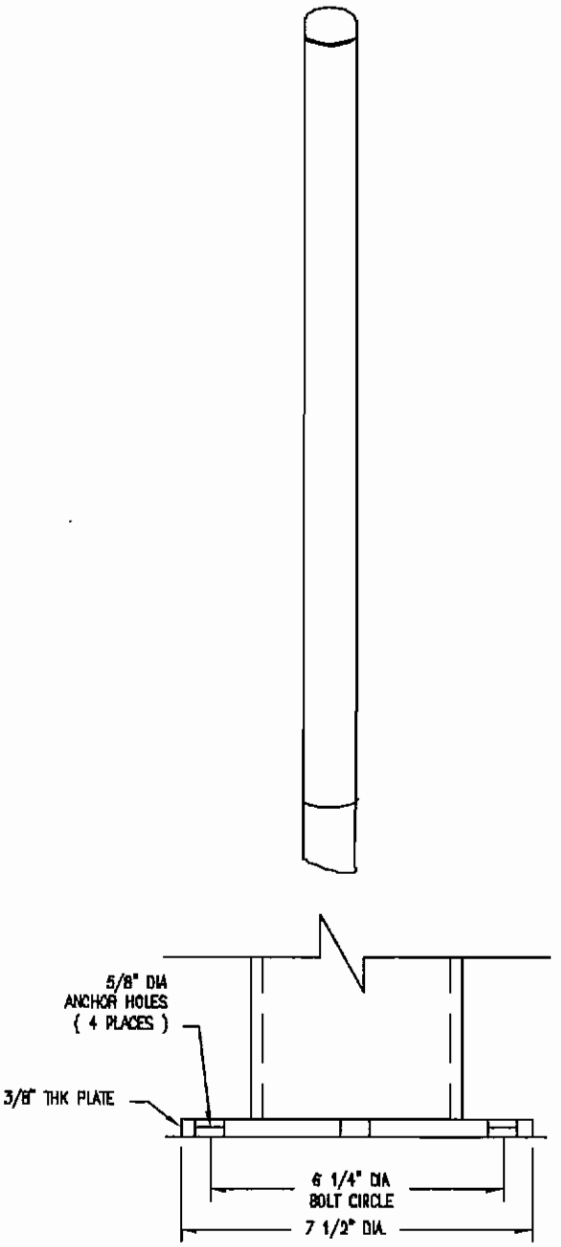



CROSS SECTION

TREE TRIMMING DETAIL




☐ S-1 EMBEDED



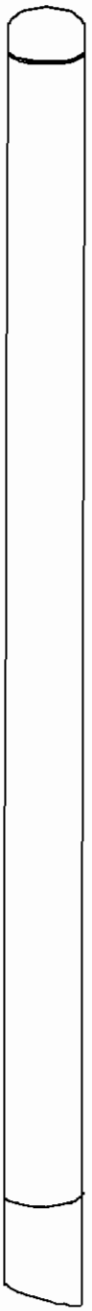

☐ S-2 SURFACE MT

NOTES

1.) STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
2.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED FOR S-2 OPTION.

DuMor, inc.
P.O. Box 142 Mifflintown, PA 17059-0142

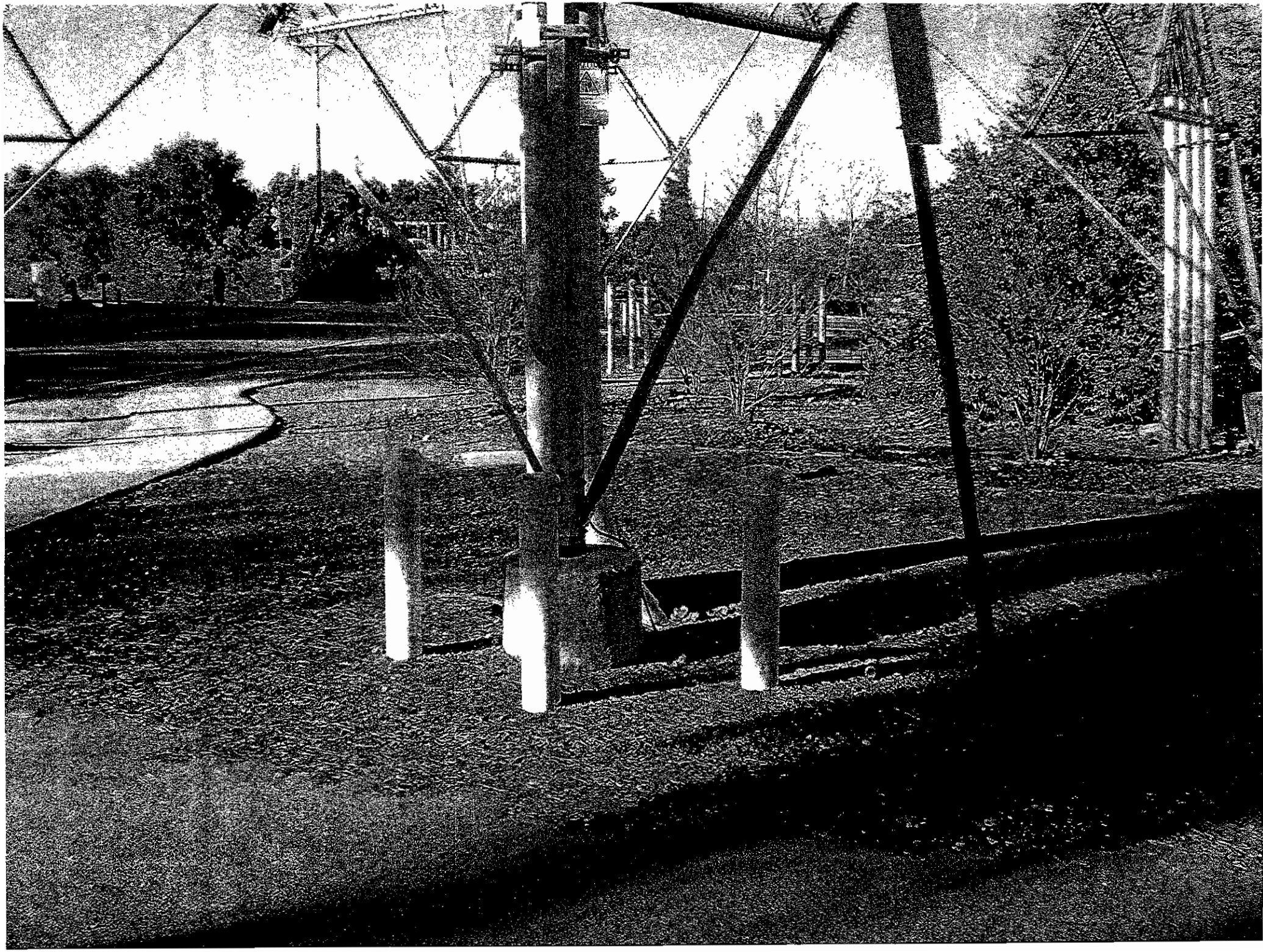
| | | | | |
|---|---|---|---|---|
| SCALE : NONE | TITLE : BOLLARD | | | |
| DATE DRAWN : 10/27/05 | | | | |
| DRAWN BY : AWH | REV. B | DRAWING NUMBER 400-42 | SHEET 1 OF 2 | |
| DATE REV. : 01/18/07 | | | | |
| REV. BY : ESS | | | | |



NOTE:
1. MOUNT AND ANCHOR AS SPECIFIED.

DuMor, inc.
P.O. Box 142 Mifflintown, PA 17059-0142

| | | | | |
|---|---|---|---|---|
| SCALE : NONE | TITLE : BOLLARD | | | |
| DATE DRAWN : 10/26/05 | | | | |
| DRAWN BY : AWH | REV. B | DRAWING NUMBER 400-42 | SHEET 2 OF 2 | |
| DATE REV. : 01/18/07 | | | | |
| REV. BY : ESS | | | | |



# APPENDIX B

- **GLEN BRAE DRIVE CROSSING IMPROVEMENTS**
- **SANTA CLARA VALLEY WATER DISTRICT RODEO CREEK TRASH RACK**
- **CONSTRUCTION DETAIL VERIZON BUILDING FENCE OPENING**
- **CALTRANS ENCROACHMENT PERMIT**
- **DE ANZA TRAIL PRELIMINARY ARBORIST REPORT**

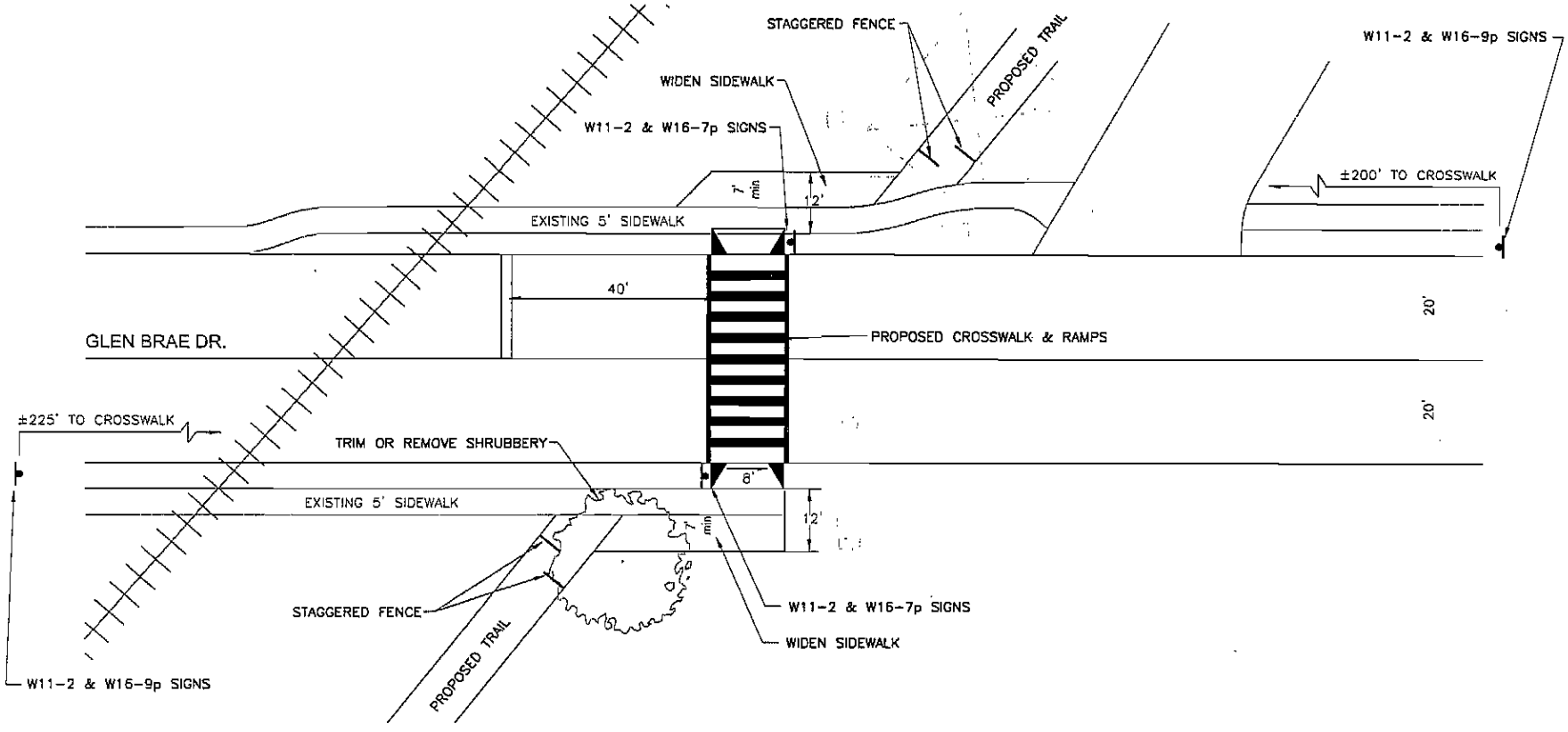
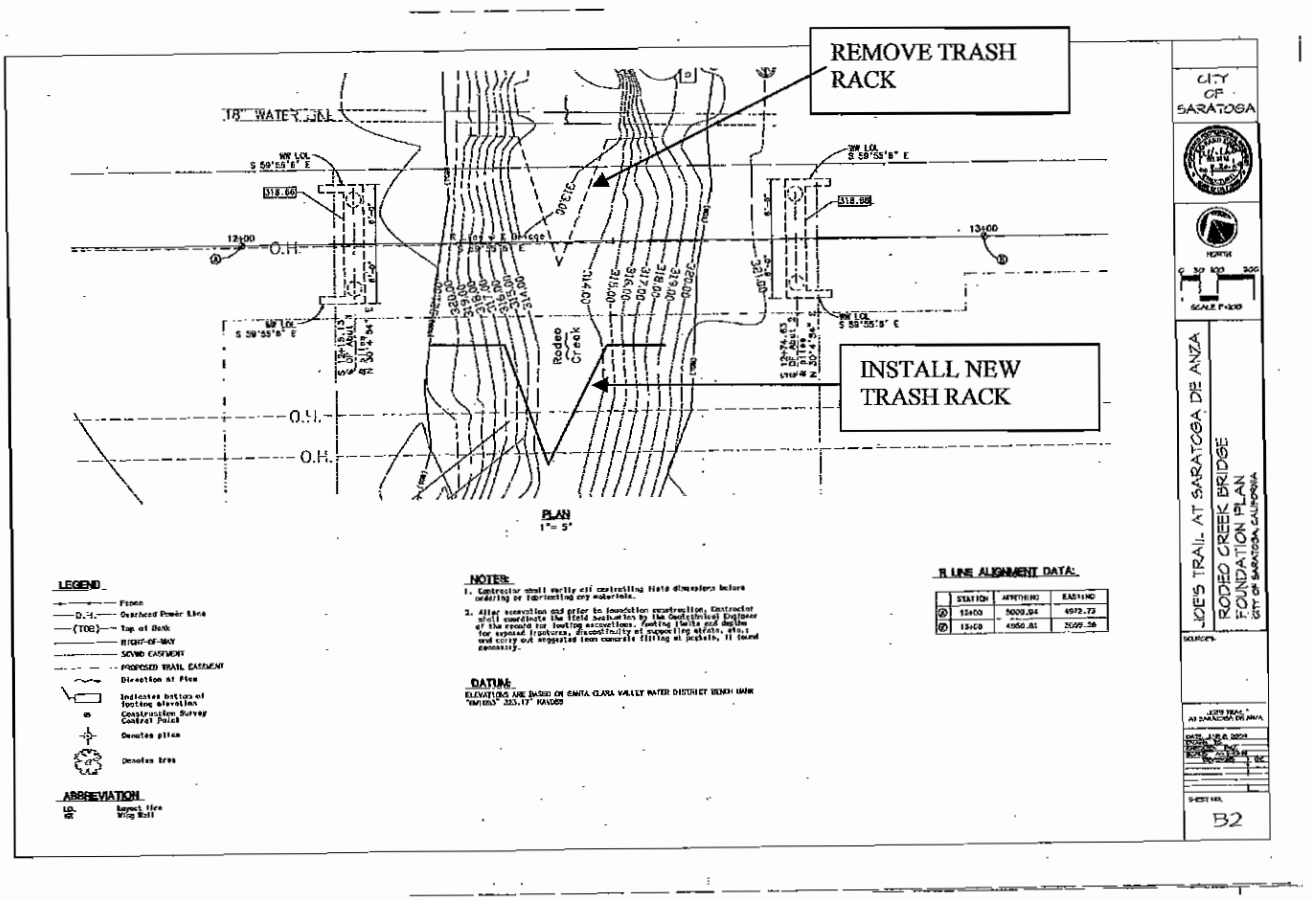



Figure 4 | GLEN BRAE DRIVE TRAIL CROSSING
Alternate B

1029-146
August 20, 2008

*Fehr & Peers Associates*

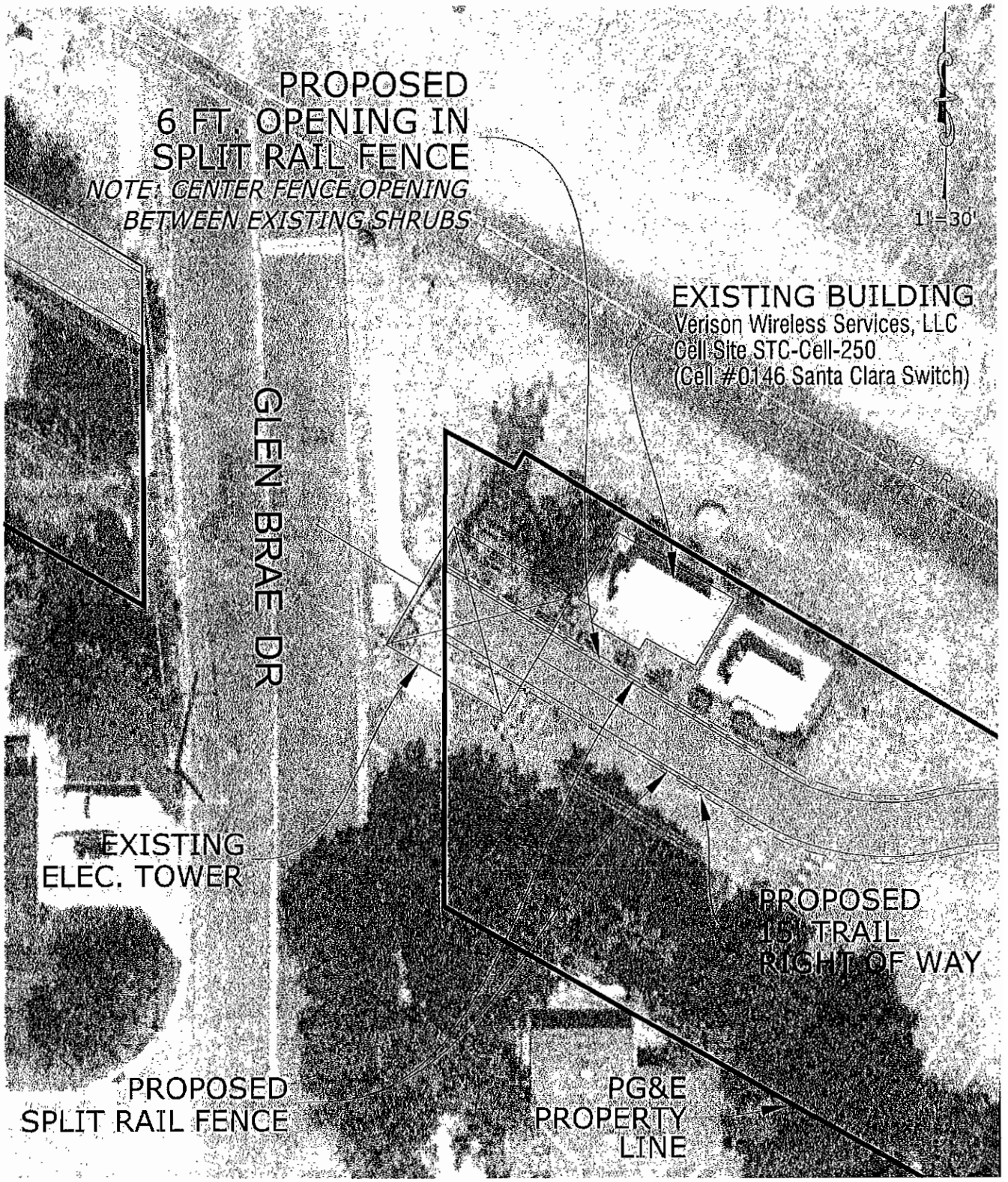
# SANTA CLARA VALLEY WATER DISTRICT RODEO CREEK TRASH RACK




Contractor must submit shop drawings of the new location and design of the new trash rack to the Santa Clara Valley Water District for approval.

Contact:

Usha Chatwani, P.E.
Associate Civil Engineer
Community Projects Review Unit
Phone: (408)265-2607, extn. 2731
Fax: (408) 979-5635




| | | |
|---|---|---|
| Joe's Trail Project<br>Construction Detail<br>Verison Building Fence Opening<br>City of Saratoga | PAUL JENSEN<br>PROFESSIONAL LAND SURVEYOR #4627<br>BOULDER CREEK, CALIFORNIA | DATE: July 2009<br>SCALE: 1" = 30' |

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

# ENCROACHMENT PERMIT RIDER

TR-0122 (REV 3/92)

| Collected by | Permit No. (Original) |
|---|---|
| | 0408-NMC1485 |
| Rider Fee Paid | DST/Co/Rte/PM |
| | 04-SCL-85 13.46/15.48 |
| Date | Rider Number |
| December 22, 2009 | 0409-NRT2025 |

**TO:** City of Saratoga
13777 Fruitvale Avenue
Saratoga, CA 95070

Attn: Macedonio Nunez
Phone: (408) 868-1218

, **PERMITTEE**

In compliance with your request of December 21, 2009, we are hereby amending the above numbered encroachment permit as follows:

Reference your project to construct 12' wide trail with split rail fencing approximately 225' long beyond shoulder area along State Highway 04-SCL-85, Post Miles 13.46/15.48, at Saratoga Avenue, in the City of Saratoga.

Date of completion extended to: 12/31/2010

**Except as amended, all other terms and provisions of the original permit shall remain in effect.**

Lbp

BS (2), AA
TMC/J. Richardson,
DTM/Phyllis Chan
0408-NMC1485

**APPROVED:**

**BIJAN SARTIPI, District Director**

**BY:**

**MICHAEL D. CONDIE, District Permit Engineer**

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

# ENCROACHMENT PERMIT

TR-0120

| Permit No. | |
|---|---|
| 0408-NMC1485 | |
| Dist/Co/Rte/PM | |
| 04-SCL-85 13.46/15.48 | |
| Date | |
| September 8, 2008 | |
| Fee Paid | Deposit |
| $ | $ |
| Performance Bond Amount (1) | Payment Bond Amount (2) |
| | |
| Bond Company | |
| | |
| Bond Number (1) | Bond Number (2) |
| | |

In compliance with (*Check one*):

☒ Your application of August 25, 2008

☐ Utility Notice No. _____ of _____

☐ Agreement No. _____ of _____

☐ R/W Contract No. _____ of _____

**TO:** ☐ City of Saratoga
13777 Fruitvale Avenue
Saratoga, CA 95070

Attn: Macedonio Nunez
☐ Phone: (408) 868-1281 ☐ , **PERMITTEE**

and subject to the following, **PERMISSION IS HEREBY GRANTED** to:

Construct 12' wide trail with split rail fencing approximately 225' long beyond shoulder area along State Highway 04-SCL-85, Post Miles 13.46/15.48, at Saratoga Avenue, in the City of Saratoga.

Seven days before work is started under this permit, notice shall be given to, and approval of construction details, operations, public safety, and traffic control shall be obtained from State Representative A. Azimzadeh, 380 Foster City Blvd., Foster City, 94404, 650-573-8669, weekdays, between 7:30 AM and 4:00 PM.

All permitted work requires the permittee to apply for and obtain a work authorization number prior to the start of work. See the attached "Encroachment Permit Project work scheduling Procedures" and the attached "Permit Project work scheduling Form". Additional time beyond the minimum seven days advanced notice required in the above paragraph may be required for obtaining approval for the traffic control.

When approved, traffic control performed under this permit shall be in accordance with the appropriate State Standard Plans T-10 through T-14. Where required by the plan, the use of flashing arrow-board is MANDATORY.

The following attachments are also included as part of this permit (*Check applicable*):

| | | |
|---|---|---|
| ☒ Yes | ☐ No | General Provisions |
| ☐ Yes | ☒ No | Utility Maintenance Provisions |
| ☒ Yes | ☐ No | Storm Water Special Previsions |
| ☐ Yes | ☒ No | A Cal-OSHA permit required prior to beginning work: # _____ |

In addition to fee, the permittee will be billed actual costs for:

| | | |
|---|---|---|
| ☐ Yes | ☒ No | Review |
| ☐ Yes | ☒ No | Inspection |
| ☒ Yes | --------- | Field Work |

*(If any Caltrans effort expended)*

☐ Yes ☒ No The information in the environmental documentation has been reviewed and considered prior to approval of this permit.

This permit is void unless the work is completed before September 30, 2009

This permit is to be strictly construed and no other work other than specifically mentioned is hereby authorized.
No project work shall be commenced until all other necessary permits and environmental clearances have been obtained.

LP

cc: BS (2), AA
TMC J. Richardson,
DTM Phyllis Chan

APPROVED:

**BIJAN SARTIPI, District Director**

BY:

**M. D. CONDIE, District Permit Engineer**

Community Development Department
City of Saratoga
13777 Fruitvale Avenue
Saratoga, California 95070

# DeAnza Trail Preliminary Arborist Report

Prepared by Kate Bear
ISA Certified Arborist WE 2250A

August 16, 2006

## INTRODUCTION

The city of Saratoga is investigating the possibility of creating a hiking and biking trail along the Union Pacific Railroad line within the PG&E easement that runs parallel to the tracks, along a 1.5 mile stretch between Saratoga Avenue and Saratoga-Sunnyvale Road.

A total of 28 trees protected by City Ordinance 15-050 are potentially impacted by the project. They include three Monterey pines (#10, 11and 12), one white alder (10a), one Mexican fan palm (#10b), one cluster of black oak trees (#46), and twenty two coast live oaks (1, 4, 13, 14, 21, 30, 31, 38 – 45, and 47 - 53. Data for each tree is compiled in a table at the end of this report. Tree locations are noted on the attached copy of the Master Plan.

Plans reviewed for this report include the DeAnza Trail Master Plan prepared by the City of Saratoga (no date).

## SITE OBSERVATIONS, PLAN REVIEW AND TECHNICAL DISCUSSION

A total of 28 trees are potentially impacted by this project, but 53 trees were tagged. Some were tagged prior to determining whether they were impacted by the trail. Those trees not impacted by the project include #2, 3, 5-9, 15-20, 22-29 and 32-37. In addition, trees #43, 49 and 53, which are impacted by the project, were not tagged because they were inaccessible.

A total of eight trees appear to be in conflict with the trail and bridges. They include one Mexican fan palm and one white alder growing in Saratoga Creek (10a and 10b), one coast live oak in a very dense section of vegetation on the west side of Glen Brae Drive (#43), and a clump of five young oak trees (#49-53) on the portion of the trail that meets Saratoga-Sunnyvale Road. Their total appraised value is $5,965. It may be possible to avoid impacting one or more of these trees if the trail can be adjusted. If it is necessary to remove any of these trees, I recommend that the City plant new trees equal in value to the value of the removed trees along the trail.

Adjacent to Congress Springs Park, the parking area that will encompass the trail encroaches upon six oak trees (#13, 14, 21, 30, 31 and 38). Excavation for the trail should be no deeper than three inches under the canopies of these trees.

It appears that the bridge across Rodeo Creek can be constructed without needing to remove any trees. One tree, coast live oak #47, is an outstanding specimen, and all measures ought to be taken to preserve this tree and avoid any impact to it. It seems possible to construct the bridge across the creek without negative impacts to this tree. It appears that the only impact would come from excavation for supporting piers for the bridge. Even relatively large piers would have a minor impact on the tree's root zone.

**RECOMMENDATIONS**

1. Tree protective fencing shall be installed and established prior to any grading or the arrival of construction equipment or materials on site. It shall be comprised of six-foot high chain link fencing mounted on eight-foot tall, two-inch diameter galvanized posts, driven 24 inches into the ground and spaced no more than 10 feet apart. Once established, the fencing must remain undisturbed and be maintained throughout the construction process until final inspection.

2. A preconstruction meeting shall be held with the contractor following installation of protective fencing and prior to start of work.

3. Unless otherwise approved, all construction activities must be conducted outside the designated fenced area (even after fencing is removed). These activities include, but are not necessarily limited to, the following: demolition, grading, trenching, equipment cleaning, stockpiling and dumping materials (including soil fill), and equipment/vehicle operation and parking.

4. Any approved grading or trenching beneath tree canopies shall be manually performed using shovels.

5. Any pruning of trees on site must be performed under the supervision of an ISA Certified Arborist and according to ISA standards.

6. The disposal of harmful products (such as chemicals, oil and gasoline) is prohibited beneath tree canopies or anywhere on site that allows drainage beneath tree canopies. Additionally, fuel shall not be stored nor shall any refueling or maintenance of equipment occur within 20 feet of the tree's trunks.

7. Herbicides shall not be applied beneath the tree canopies. Where used on site, they must be labeled for safe use near trees.

Attachments:
Tree Inventory Table
Map Showing Tree Locations

# TREE INVENTORY TABLE

| Line No. | TREE TAG NO. | TREE NAME | Trunk Diameter (in,) - per Guide for Plant Appraisal | Estimated Canopy Spread (ft.) | Health Condition (100% = best, 0% = worst) | Structural Integrity (100% = best, 0% = worst) | Overall Condition | Suitability for Preservation (High/Moderate/Low) | In Conflict with Proposed Design | Appraised Value |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 | Coast live oak *Quercus agrifolia* | 27 | 60 | 100 | 75 | Good | High | | $11,700 |
| 2 | 4 | Coast live oak *Quercus agrifolia* | 6 | 10 | 100 | 50 | Good | High | | $840 |
| 3 | 10 | Monterey pine *Pinus radiata* | 34 | 50 | 75 | 25 | Good | Moderate | | $5,900 |
| 4 | 10a | White alder *Alunus rhombifolia* | 10, 8 | 20 | 75 | 75 | Good | Moderate | | $630 |
| 5 | 10b | Mexican fan palm *Pinus radiata* | 15 ft | 10 | 75 | 100 | Good | Low | | $375 |
| 6 | 11 | Monterey pine *Pinus radiata* | 18 | 30 | 50 | 50 | Fair | Moderate | | $1,670 |
| 7 | 12 | Monterey pine *Pinus radiata* | 22 | 30 | 50 | 50 | Fair | Moderate | | $2,490 |
| 8 | 13 | Coast live oak *Quercus agrifolia* | 16 | 25 | 100 | 75 | Good | High | | $4,100 |
| 9 | 14 | Coast live oak *Quercus agrifolia* | 11.5 | 20 | 100 | 75 | Good | High | | $2,130 |
| 10 | 21 | Coast live oak *Quercus agrifolia* | 14.5 | 25 | 100 | 100 | Good | High | | $3,860 |
| 11 | 30 | Coast live oak *Quercus agrifolia* | 7, 6 | 15 | 100 | 75 | Good | High | | $790 |
| 12 | 31 | Coast live oak *Quercus agrifolia* | 5.5, 7.5 | 15 | 100 | 50 | Good | High | | $780 |
| 13 | 38 | Coast live oak *Quercus agrifolia* | 17.5, 8.5, 16.5, 12, 10.5 | 40 | 75 | 25 | Good | High | | $2,800 |
| 14 | 39 | Coast live oak *Quercus agrifolia* | 9.5 10, 8 | 30 | 75 | 25 | Good | High | | $920 |
| 15 | 40 | Coast live oak *Quercus agrifolia* | 21 | 30 | 100 | 75 | Good | High | | $7,000 |
| 16 | 41 | Coast live oak *Quercus agrifolia* | 28.5 | 40 | 75 | 75 | Good | High | | $11,200 |
| 17 | 42 | Coast live oak *Quercus agrifolia* | 19, 14.5 | 35 | 75 | 75 | Good | High | | $5,000 |

# APPENDIX C

## Monitoring Report Program prepared by LSA Associates, Inc., dated September 2008.

# MONITORING AND REPORTING PROGRAM

This Mitigation Monitoring and Reporting Program (MMRP) has been formulated based upon the findings of the Initial Study/Mitigated Negative Declaration (EIR) for the proposed Saratoga De Anza Trail (project) in the City of Saratoga. The MMRP lists mitigation measures recommended in the IS/MND for the proposed project and identifies monitoring and reporting requirements. The MMRP specifies the City department responsible for implementing and monitoring each measure.

Table 1 presents the mitigation measures identified for the proposed project. Each mitigation measure is numbered with a symbol indicating the topical section to which it pertains, a hyphen, and the impact number. For example, AIR-2 is the second mitigation measure identified in the Air Quality analysis of the IS/MND.

The first column of Table 1 identifies the mitigation measure. The second column, entitled "Party Responsible for Implementing Mitigation," names the party responsible for carrying out the required action. The third column, "Implementation Procedure," describes the steps involved in implementing the mitigation measure. The fourth column, "Implementation Timing," identifies the time the mitigation measure should be initiated. The fifth column, "Party Responsible for Monitoring," names the party ultimately responsible for ensuring that the mitigation measure is implemented. "Action by Monitor" outlines the steps for monitoring the action identified in the mitigation measure. The sixth column, entitled "Monitoring Timing," states the time the monitor must ensure that the mitigation measure has been implemented. The last column will be used by the City to ensure that individual mitigation measures have been monitored.

## Table 1: Mitigation Monitoring and Reporting Program

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| **AESTHETICS** | | | | | | | |
| AES-1: The City shall implement the following measures:<br>1. Tree protective fencing shall be installed and established prior to any grading or the arrival of construction equipment or materials on the project site. The fencing shall comprise 6-foot high chain-link fencing mounted on 8-foot tall, 2-inch diameter galvanized posts, driven 24 inches into the ground and spaced no more than 10 feet apart. Once established, the fencing shall remain undisturbed and be maintained throughout the construction process until final inspection.<br>2. A preconstruction meeting shall be held with the contractor following installation of protective fencing and prior to start of work to review tree protection measures.<br>3. Unless otherwise approved, all construction activities shall be conducted outside the designated fenced area, including the time after fencing is removed. Construction activities include, but are not limited to, demolition, grading, | Public Works Department | 1. Install protective fencing around trees within or adjacent to the project site.<br><br>2. Hold a pre-construction meeting with the contractor to review tree protection measures.<br><br>3. Conduct all construction activities outside the fencing around trees, unless otherwise approved.<br><br>4. Perform grading or trenching beneath tree canopies manually.<br><br>5. Prune trees under the supervision of a certified arborist, and according to International Society of Arboriculture standards.<br><br>6. Dispose of harmful products in accordance with recognized hazardous materials disposal protocol and do not store fuel or maintain equipment | Prior to and during project construction | Public Works Department | Verify that the construction contractor and/or City employees involved in project construction are following tree protection requirements | Prior to and during project construction | *Name:*<br><br>*Date:* |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| trenching, equipment cleaning, stockpiling and dumping materials (including soil fill), and equipment/vehicle operation and parking.<br>4. Any approved grading or trenching beneath tree canopies shall be performed manually using shovels.<br>5. Any pruning of trees shall be performed under the supervision of an International Society of Arboriculture (ISA) Certified Arborist and according to ISA standards.<br>6. The disposal of harmful products (such as chemicals, oil, and gasoline) shall be prohibited beneath tree canopies or anywhere on the site where drainage occurs beneath tree canopies. In addition, fuel shall not be stored and refueling or maintenance of equipment shall not occur within 20 feet of a tree trunk.<br>7. Herbicides and pesticides shall not be applied beneath tree canopies as part of the proposed project. Where used on the site, herbicides shall be labeled for safe use near trees.<br>8. Tree removal shall be avoided if feasible. If trees are removed (in or adjacent to the project site), | | within 20 feet of a tree trunk.<br><br>7. Do not apply herbicides and pesticides beneath tree canopies and, elsewhere in the site, use herbicides that are safe for use near trees.<br><br>8. Avoid tree removal. If trees are removed, replace them. | | | | | |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| they shall be replaced. | | | | | | | |
| **AGRICULTURAL RESOURCES** - *There are no significant Agricultural Resources impacts.* | | | | | | | |
| **AIR QUALITY** | | | | | | | |
| AIR-1: The construction contractor shall implement the following measures at the project site during the construction and pre-construction phases of the project:<br>1. Water all active construction sites at least twice daily.<br>2. Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.<br>3. Apply water three times daily or apply non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.<br>4. Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.<br>5. Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.<br>6. Hydroseed or apply non-toxic soil stabilizers to inactive construction areas (previously disturbed areas inactive for ten | Construction Contractor | Implement all the dust control measures listed in Mitigation Measure AIR-1 | During project construction | Public Works Department | Visit project site and verify that dust control measures are being implemented | During project construction | *Name:*<br><br>*Date:* |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| days or more).<br>7. Enclose, cover, water twice daily, or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.)<br>8. Limit traffic speeds on unpaved roads to 15 miles per hour.<br>9. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.<br>10. Replant vegetation in disturbed areas as quickly as possible.<br>11. Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour.<br>12. Minimize idling time (to 5 minutes or less).<br>13. Maintain properly-tuned equipment. | | | | | | | |
| AIR-2: Implement Mitigation Measure AIR-1. | Refer to Mitigation Measure AIR-1 | | | | | | |
| AIR-3: Implement Mitigation Measure AIR-1. | Refer to Mitigation Measure AIR-1 | | | | | | |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| **BIOLOGICAL RESOURCES** | | | | | | | |
| BIO-1: If feasible, all vegetation removal activities shall be conducted during the non-breeding season (i.e., September through February) to avoid direct impacts to nesting birds. If such work must be scheduled during the breeding season (March through August), a qualified ornithologist shall conduct a pre-construction survey of the work area to determine if any birds are nesting in or in the vicinity of vegetation to be removed. The pre-construction survey shall be conducted within 15 days prior to the start of work from March to May (since there is higher potential for birds to initiate nesting during this period), and within 30 days prior to the start of work from June–August. If active nests are found in the work area, the biologist shall determine an appropriately sized buffer around the nest in which no work will be allowed until the young have successfully fledged. The size of the nest buffer shall be determined by the biologist in consultation with the California Department of Fish and Game (CDFG), and shall be based to a large extent on the nesting species and its sensitivity to disturbance. | Public Works Department | Remove vegetation from September through February, if feasible. If vegetation is removed outside this period, retain a qualified ornithologist to conduct a pre-construction survey of the work area, as described in Mitigation Measure BIO-1. Establish buffers around identified nests, in consultation with CDFG. | Prior to project construction | Public Works Department | Verify that vegetation removal takes place during the non-breeding season or review the pre-construction ornithologist survey and verify that appropriate buffers have been established around nests | Prior to project construction | *Name:*<br><br>*Date:* |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| BIO-2a: The City shall apply for a Streambed Alteration Agreement (SAA) from the California Department of Fish and Game (CDFG). The SAA shall include measures to protect fish and wildlife resources, including Pacific pond turtle and California red-legged frog, during construction. Measures included in the SAA to protect Pacific pond turtle and California red-legged frog shall include the following:<br>• Conduct pre-construction surveys of the proposed work area one to two weeks prior to the start of construction to ensure that no individuals are present. Surveys shall be conducted by a qualified wildlife biologist and shall consist of one daytime and one night survey.<br>• Conduct a final pre-construction survey within 48 hours prior to the start of construction to confirm that no individuals are present.<br>• Require that construction of the Rodeo Creek and Saratoga Creek bridges be completed between April 1 and November 1.<br>• Locate equipment maintenance, refueling, and staging areas at least 100 feet from creek banks. | Public Works Department | Apply for a Streambed Alteration Agreement from the CDFG and comply with the Pacific pond turtle and California red-legged frog measures included in the agreement | Prior to construction of the two bridges | Public Works Department | Verify that a Streambed Alteration Agreement has been granted and that the construction contractor and City staff have complied with the turtle and frog protection measures | Prior to construction of the two bridges | *Name:*<br><br>*Date:* |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| Conduct refueling behind a contaminant barrier that prevents spilled or leaked fuel from entering the creek. All equipment servicing shall be conducted within designated areas with appropriate setbacks from the top of the bank. All motorized equipment used during construction shall be checked for oil, fuel, and coolant leaks prior to initiating work.<br>• Implement a Storm Water Pollution Prevention Plan (SWPPP) as part of the project, to ensure that sediment and synthetic contaminants from construction sites do not enter creek channels. | | | | | | | |
| BIO-2b: The amount of riparian vegetation trimmed, removed, or disturbed shall be minimized. Native trees (more than 6 inches in diameter at breast height (dbh)) that are removed in riparian areas shall be replaced at a 3:1 ratio on-site (to the extent feasible) or within the same watershed (i.e., Rodeo Creek or Saratoga Creek) using local, native riparian trees. Any revegetation efforts shall be completed prior to the rainy season. The plantings shall be maintained until successfully established. | Public Works Department | Minimize the amount of trimmed, removed, or disturbed riparian vegetation. Replace trees and other riparian vegetation in accordance with the provisions of Mitigation Measure BIO-2b. | Prior to project construction | Public Works Department | Review detailed project plans and verify that riparian tree removal has been minimized. Verify that any removed trees would be replaced and that revegetation would occur prior to the onset of the rainy season. | Prior to project construction | *Name:*<br>*Date:* |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| BIO-2c: To avoid the introduction of invasive species into the project site during project construction, contract specification shall include (at a minimum) the following measures:<br>• All earthmoving equipment to be used during project construction shall be thoroughly cleaned before arriving on the project site.<br>• All seeding equipment (i.e., hydroseed trucks), if used on the site, shall be thoroughly rinsed at least three times prior to arriving at the project site and beginning seeding work.<br>• To avoid spreading any non-native invasive species already existing on-site, to off-site areas, all equipment shall be thoroughly cleaned before leaving the site. | Construction Contractor | Include the anti-invasive species measures included in Mitigation Measure BIO-2c in the construction plans | Prior to project construction | Public Works Department | Verify that construction plans include the required measures outlined in Mitigation Measure BIO-2c and visit the site to confirm that measures are being implemented | Prior to and during construction period | *Name:*<br>*Date:* |
| BIO-3: Implement Mitigation Measure AES-1. | Refer to Mitigation Measure AES-1 | | | | | | |
| **CULTURAL RESOURCES** | | | | | | | |
| CULT-1: If deposits of prehistoric or historical archaeological materials are encountered during project construction activities, all work within 25 feet of the discovery shall be redirected and a qualified archaeologist shall be contacted to assess the finds and make recommendations. If such | Construction Contractor and Public Works Department | If potential archaeological materials are uncovered during the construction period, no work shall occur within 25 feet of the discovery. The Public Works Department shall retain a qualified | During project construction | Public Works Department | Review the archaeology report and verify that recommendations have been followed | During project construction | *Name:*<br>*Date:* |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| deposits cannot be avoided, they shall be evaluated for California Register of Historical Resources eligibility. If the deposits are not eligible, avoidance is not necessary. If the deposits are eligible, they shall be avoided by project construction activities, or such effects shall be mitigated to a less-than-significant level. Upon completion of the archaeological assessment, the archaeologist shall prepare a report documenting methods and results of the assessment, and shall provide recommendations for the treatment of archaeological materials discovered. The report shall be submitted to the City of Saratoga and the Northwest Information Center. | | archaeologist to assess the finds and make recommendations. The Public Works Department shall follow these recommendations. | | | | | |
| CULT-2: Implement Mitigation Measure CULT-1. | Refer to Mitigation Measure CULT-1 | | | | | | |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| CULT-3: If paleontological resources are discovered during project construction activities, all work within 25 feet of the discovery shall be redirected until a paleontological monitor has assessed the situation and made recommendations regarding their treatment. It is recommended that adverse effects to paleontological resources be avoided by project activities. If avoidance is not feasible, the paleontological resources shall be evaluated for their significance. If the resources are not significant, avoidance is not necessary. If the resources are significant, they shall be avoided, or such effects shall be mitigated. Mitigation shall consist of data recovery, report preparation, fossil curation, and public outreach. The report documenting the methods and results of monitoring should be submitted both to the City of Saratoga and to the paleontological repository to which the fossils would be offered for curation, such as the University of California Museum of Paleontology, upon project completion. | Construction Contractor and Public Works Department | If potential paleontological materials are uncovered during the construction period, no work shall occur within 25 feet of the discovery. The Public Works Department shall retain a qualified paleontologist to assess the finds and make recommendations. The Public Works Department shall follow these recommendations. | During project construction | Public Works Department | Review the paleontology report and verify that recommendations have been followed | During project construction | *Name:*<br><br>*Date:* |
| CULT-4: If human remains are encountered, work within 25 feet of the discovery shall be redirected and the County Coroner notified | Construction Contractor and Public Works Department | If human remains are found during the construction period, no work shall occur within | During project construction | Public Works Department | Review the archaeology report and verify that the recommendations of | During project construction | *Name:*<br><br>*Date:* |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| immediately. At the same time, an archaeologist shall be contacted to assess the situation. Project personnel shall not collect or move any human remains or associated materials. If the human remains are of Native American origin, the Coroner shall notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission will identify a Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated grave goods. Upon completion of the assessment, the archaeologist shall prepare a report documenting the methods and results of the assessment, and provide recommendations for the treatment of the human remains and any associated cultural materials, as appropriate and in coordination with the recommendations of the MLD. The report shall be submitted to the City of Saratoga and the Northwest Information Center. | | 25 feet of the discovery. The Public Works Department shall contact the County Coroner and an archaeologist. The City shall follow the recommendations of the Most Likely Descendant and archaeologist, if the remains are of Native American origin. | | | the Most Likely Descendant and archaeologist are followed | | |
| **GEOLOGY AND SOILS** - ***There are no significant Geology and Soils impacts.*** | | | | | | | |
| **HAZARDS** - ***There are no significant Hazards impacts.*** | | | | | | | |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
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| **HYDROLOGY AND WATER QUALITY** | | | | | | | |
| HYD-1: The trail shall be constructed so that runoff from the trail is not concentrated, but diffused into buffer area adjoining the trail. To the maximum extent practicable, runoff from the trail shall not be directed into the creeks without prior treatment (e.g. adequate residence time in a grassy swale or detention area). Swales and buffer areas adequate to treat runoff from the trail shall be clearly depicted in the final project design plans. | Public Works Department | Incorporate passive storm water treatment measures into the detailed trail design plans | Prior to project construction | Public Works Department | Verify that passive storm water management features have been incorporated into the detailed trail design plans, and that these features are adequate to treat runoff from the trail | Prior to project construction | *Name:*<br><br>*Date:* |
| **LAND USE AND PLANNING** - ***There are no significant Land Use and Planning impacts.*** | | | | | | | |
| **MINERAL RESOURCES** - ***There are no significant Mineral Resources impacts.*** | | | | | | | |
| **NOISE** | | | | | | | |
| NOISE-1: The construction contractor shall implement the following measures:<br>• In accordance with Article 7-30-060(a) of the Saratoga Noise Ordinance, construction activities (including earthmoving and grading) within the project site shall be conducted only between the hours of 7:30 a.m. and 6:00 p.m. Monday through Friday, and between the hours of 9:00 a.m. and 5:00 p.m. on Saturday. Construction shall not occur on Sundays or weekday holidays. | Construction Contractor | Implement the noise-reducing measures outlined in Mitigation Measure NOISE-1 | During project construction | Public Works Department | Visit construction site to verify that noise-reducing measures are being implemented | During project construction | *Name:*<br><br>*Date:* |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| • During construction, all construction equipment powered by internal combustion engines shall be properly muffled and maintained.<br>• Unnecessary idling of internal combustion engines shall be prohibited.<br>• All stationary noise-generating equipment, such as air compressors, shall be located as far as practical from residences in the vicinity of the project site. Such equipment shall be acoustically shielded using standard plywood barriers, noise control blankets, or other appropriate equipment.<br>• Whenever feasible, quiet construction equipment, particularly air compressors, shall be utilized. | | | | | | | |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
|---|---|---|---|---|---|---|---|
| NOISE-2: Implement Mitigation Measure NOISE-1. | Refer to Mitigation Measure NOISE-1 | | | | | | |
| NOISE-3: Implement Mitigation Measure NOISE-1. | Refer to Mitigation Measure NOISE-1 | | | | | | |
| **POPULATION AND HOUSING** - ***There are no significant Population and Housing impacts.*** | | | | | | | |
| **PUBLIC SERVICES** - ***There are no significant Public Services impacts.*** | | | | | | | |
| **RECREATION** - ***There are no significant Recreation impacts.*** | | | | | | | |
| **TRANSPORTATION/TRAFFIC** | | | | | | | |
| TRAF-1: The City shall add pedestrian striping and pedestrian signal head indicators for the east-west movement at the intersection of Saratoga-Sunnyvale Road and Sea Gull Way. To direct pedestrians and bicyclists to use the designated crossing and avoid crossing elsewhere, the City shall also install at the end of the western terminus of the trail sign "R9-2" ("Use crosswalk" with arrow) or "R9-3b" ("Cross Only At Cross Walks"), as depicted in the Manual on Uniform Traffic Control Devices (MUTCD) and illustrated at right. | Public Works Department | Include the following features in the detailed plans for the project: 1) pedestrian striping and pedestrian signal head indicators at the intersection of Saratoga-Sunnyvale Road and Sea Gull Way and 2) trail sign R9-2 or R9-3b at the end of the western terminus of the trail | Prior to project construction | Public Works Department | Verify that the features listed in Mitigation Measure TRAF-1 are included in the detailed project plans | Prior to project construction | *Name:*<br>*Date:* |
| TRAF-2: The City shall install signage stating "Trail Dead Ends 0.6-mile" at the entrance to the trail near Saratoga-Sunnyvale Road. | Public Works Department | Include the following feature in the detailed plans for the project: a sign stating "Trail Dead Ends 0.6-mile" at the entrance to the trail near Saratoga-Sunnyvale Road | Prior to project construction | Public Works Department | Verify that the sign described in Mitigation Measure TRAF-2 is included in the detailed project plans | Prior to project construction | *Name:*<br>*Date:* |
| TRAF-3: The City shall install | Public Works | Include the following | Prior to project | Public Works | Verify that the sign | Prior to project | *Name:* |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
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| signage stating "Trail Dead Ends 0.3-mile" west of Glen Brae Drive. | Department | feature in the detailed plans for the project: a sign stating "Trail Dead Ends 0.3-mile" west of Glen Brae Drive | construction | Department | described in Mitigation Measure TRAF-3 is included in the detailed project plans | construction | *Date:* |
| TRAF-4: The City shall install a standard crosswalk consisting of two parallel white solid lines 12 inches wide spaced 8 feet apart at the Glen Brae crossing. A crosswalk warning sign shall also be installed to alert motorists of the pedestrian crossing. The sign "W11-2," as depicted in MUTCD and illustrated at right, shall be used to alert motorists about the crossing and shall be installed at a location that would provide adequate advance warning for drivers. | Public Works Department | Include the following features in the detailed plans for the project: 1) a standard crosswalk consisting of two parallel white solid lines 12 inches wide spaced 8 feet apart at the Glen Brae Crossing and 2) crosswalk warning sign W11-2 at the Glen Brae crossing | Prior to project construction | Public Works Department | Verify that the features described in Mitigation Measure TRAF-4 are included in the detailed project plans | Prior to project construction | *Name:* *Date:* |
| TRAF-5: Signs "R5-6" (no bicycles graphic) and "R5-10c" (Pedestrians Prohibited), as depicted in the MUTCD and illustrated at right, shall be posted by the City on the northwest side of the railroad bridge to prohibit pedestrians and bicyclists from using the bridge. Additionally, landscape features and/or fencing shall be installed to discourage trail users from crossing the railroad bridge. | Public Works Department | Include the following features in the detailed plans for the project: 1) signs R5-6 and R5-10c at the northwest side of the railroad bridge and 2) landscape features and fencing adjacent to the bridge (to discourage/prevent pedestrian use) | Prior to project construction | Public Works Department | Verify that the features described in Mitigation Measure TRAF-5 are included in the detailed project plans | Prior to project construction | *Name:* *Date:* |
| TRAF-6: Sign "R15-8," as depicted in the MUTCD and | Note: This mitigation measure is no longer applicable because the Fredericksburg Drive/Guava Court crossing has been closed. | | | | | | |

Table 1 *Continued*

| Mitigation Measure | Party Responsible for Implementing Mitigation | Implementation Procedure | Implementation Timing | Party Responsible for Monitoring | Action by Monitor | Monitoring Timing | Verification of Compliance Name/ Date |
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| illustrated at right, shall be installed at the Fredericksburg Drive and Guava Court access points to warn pedestrians to look for trains before crossing the railroad tracks. | | | | | | | |
| **UTILITIES AND SERVICE SYSTEMS** - ***There are no significant Utilities and Service Systems impacts.*** | | | | | | | |