

SECTION 02 41 13
SITE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Demolish and remove portions of existing site facilities as described in Contract Documents.
- B. Related Sections:
 - 1. Section 32 00 01 - General Exterior Site Construction Requirements [./02051.wpd](#)
 - 2. New and replacement work specified in appropriate specification Section.

1.2 PRICE AND PAYMENT PROCEDURES

- A. If the project contains a Lump Sum price for demolition, all demolition activities shall be included under that bid price and not individual remove and replace items.
- B. If the project contains Unit Prices for various items such as "Remove Roots Under Repairs"; the cost of removal shall be included in the item of work.
- C. If the project is bid as a lump sum, no additional payment will be made for site demolition work.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination
 - 1. **Contractor shall contact an Underground Service Alert entity 48 hours in advance of work, and have all utilities marked prior to Preconstruction Meeting or ground disturbance.**
 - 2. Contractor shall request access to owner's water service controls.
 - 3. Contractor shall coordinate with affected utilities, transportation agencies, schools, waste disposal companies, and any other pavement users.
 - 4. Contractor shall coordinate with other contractors working on the site.
 - 5. Contractor shall use approved trucking routes from the municipalities on project haul routes.
- B. Preconstruction Meeting
 - 1. Contractor shall schedule a preconstruction meeting prior to initiating work.
 - 2. Attendees at the preconstruction meeting shall include but not be limited to:
 - a. Owner's Representative
 - b. Contractor's **Project Manager and General Superintendent**
 - c. **Subcontractor Representatives** (if applicable)
 - d. QA Representative
 - e. QC Representative
 - f. Other pavement users or affected parties as applicable.
- C. Sequencing
 - 1. Contractor shall sequence the work to minimize disruption to existing project users.
 - 2. Contractor shall sequence the work to prevent demolition operations from damaging new and existing sitework features.
 - 3. Contractor shall not commence demolition until all Storm Water protection BMPs have been installed.

- D. Scheduling
 - 1. Include on Construction Schedule detailed sequence of individual site demolition operations.../01300.wpd
 - 2. Coordinate with Owner for equipment and materials to be removed by Owner, if necessary.

1.4 SUBMITTALS

- A. Upon Project Closeout - Identify abandoned utility and service lines and capping locations on record drawings.

1.5 CLOSEOUT SUBMITTALS

- A. Provide Owner documentation of disposal and recycling of site demolition material.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine site to determine extent of work necessary to separate work to be removed from work to remain. If separation procedure is unclear, request clarification from Owner's Agent at least 5 working days in advance of demolition.

3.2 PREPARATION

- A. Notify corporations, companies, individuals, and local authorities owning conduits running to property.
 - 1. Protect and maintain conduits, drains, sewers, pipes, and wires that are to remain on the property.
 - 2. Arrange for removal of wires running to and on property. Remove pipes and sewers in accordance with instructions of above owners.
 - 3. Mark locations of all underground utilities encountered including abandoned, damaged, repaired or unknown facilities on Record Drawings.
- B. Contractor shall be responsible for protecting soil stability underlying facilities during demolition.
- C. Contractor shall be responsible for protecting existing facilities.

3.3 PERFORMANCE

- A. Execute work in an orderly and careful manner, with due consideration for neighbors and the public. **Control dust.**
- B. Carefully remove, disassemble, or dismantle as required, and store in approved location on site, existing items to be reused in completed work.
- C. Concrete and Paving Removal
 - 1. Full depth saw cut joints between material to be removed and material to remain.
 - 2. Existing concrete site elements or pavement damaged during demolition or work shall be resawcut and replaced at Contractor's expense.

- D. Site Clearing
 - 1. Tree and Brush Removal
 - a. Cut off trees, shrubs, brush and vegetative growth 12 inches maximum above ground.
 - b. Remove stumps and roots 12 inches below original ground surface or until stump and all roots 1 inch or larger are removed.
 - c. Entirely remove roots of plants which normally sprout from roots as identified by Owner's Agent.
 - 2. Root Pruning and Removal
 - a. Hand excavate trench one foot wide and 20 inches deep along concrete or paving to be removed.
 - b. Cut roots encountered with saw, axe, or pruners. Do not cut roots with excavating equipment.
 - c. Remove roots under concrete and paving to 12 inches below top of base or native subgrade.
 - 3. Stripping
 - a. Strip existing vegetation layer 2 inches and remove from site prior to stripping topsoil for storage and reuse if necessary.
 - b. After stripping existing vegetation layer, strip existing topsoil 4 additional inches. Store onsite for reuse if necessary.
- E. Excavation
 - 1. Use excavation equipment and methods which do not cause or increase subgrade instability.
 - 2. Use methods which preclude tracking of soils or debris off site or onto streets, etc.
- F. Disposal
 - 1. Immediately remove from site all trees, shrubs, stumps, vegetative layer, asphalt concrete, removed concrete site elements and surface debris.
 - 2. Do not bury or burn waste.
 - 3. Comply with all local, state, and federal disposal and recycling regulations.
 - 4. If hazardous materials are encountered refer to the General Conditions.
- G. Site Maintenance
 - 1. Broom clean all remaining surfaces immediately after demolition and removal of debris. Maintain broom clean condition.
 - 2. Maintain all storm water protection measures.
 - 3. Provide continuous dust control measures until work is complete.

END OF SECTION

SECTION 02 41 15
SITE UTILITY REPAIR

PART 1 GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To
 - 1. The contractor shall identify the location of the existing utilities for the site using existing plans, obvious surface features, locations of facilities, locator services and other practical means **48 hours prior to ground disturbance.**
 - 2. At locations where identified site utilities may conflict with the planned construction, the contractor shall pothole the utility 5 days in advance of the work to ascertain if a conflict exists. If a conflict does exist, the contractor shall notify the Owner and Engineer immediately.
 - 3. Repair of existing utilities damaged during the course of construction.

1.2 PRICE AND PAYMENT PROCEDURES

- A. Payment for Repairs
 - 1. A Utility Repair Allowance is included in the project Bid Schedule. The contractor shall include this amount in his total bid.
 - 2. Payment for site utility repairs shall be made as follows:
 - a. Damaged due to Contractor's error or negligence - paid by Contractor
 - b. Damage due to unidentifiable or unknown conditions – paid through Site Utility Repair Allowance.
 - 1) Subcontractor markup limited to 5%
 - 2) Own forces markup 15%
 - 3) **“Greenbook” and Cal Trans Force Account rules do not apply to this project. Only equipment, material and personnel directly associated to repair shall be considered “extra work” by project owner.**
 - 4) No compensation for delays related to site utility repairs.
- B. Remaining monies in the Site Utility Repair Allowance at completion of job shall be credited back to owner by a change order.

1.3 ADMINISTRATIVE REQUIREMENTS

- A. Coordination
 - 1. Contractor shall coordinate with affected utilities.
 - 2. Contractor shall coordinate with other contractors working on the site.
 - 3. Coordinate with site landscape maintenance company.
- B. Preconstruction Meeting
 - 1. Contractor shall schedule a preconstruction meeting prior to initiating work.
 - 2. Attendees at the preconstruction meeting shall include but not be limited to:
 - a. Owner's Representative
 - b. Contractor's **General Foreman**
 - c. Subcontractors (if applicable)
 - d. QA Representative
 - e. QC Representative
 - f. Other site users or affected parties as applicable.
- C. Scheduling
 - 1. The location of underground facilities shall be included as an initial schedule activity.
 - 2. Potholing of potential conflicting utilities shall be performed within 48 hours after the

conflict is identified.

1.4 SUBMITTALS

- A. The workman or subcontractors to perform the repairs shall be identified prior to the initiation of work and telephone number made available to the Owner's Representative.
 - 1. The contractor shall have the resources available to immediately and expeditiously repair damaged utilities, without impact to the schedule, including:
 - a. site lighting
 - b. irrigation lines and wires
 - c. water services
 - d. electrical lines

1.5 CLOSEOUT SUBMITTALS

- A. Provide Owner with record drawings indicating site utility repairs with related information including photographs.

PRODUCTS

1.6 MATERIALS

- A. The materials used for repairs shall be compatible and similar with the site utility to be repaired.
- B. Minimum thickness of plastic pipe for irrigation repairs shall be Schedule 40.
- C. Utility Boxes: Traffic-rated box and lid in pavement areas; Plastic or composite box in landscape areas.
- D. Wire Connectors: 3M AY type connectors shall be used for wire splices.

PART 2 EXECUTION

2.1 PROTECTION

- A. The contractor is responsible for protecting existing site utilities identified or which should have been identified by compliance with these specifications.

2.2 CONSTRUCTION

- A. Repair of damaged lines or wiring due to the contractor's failure to adequately identify or protect existing utility lines shall be the contractor's responsibility.
- B. Damaged utilities which were not able to be identified or protected shall be repaired by the contractor.
 - 1. The contractor shall make all repairs in accordance with the applicable codes. Care shall be exercised to avoid further damage to existing facilities during repairs.
 - 2. The repaired lines or wiring shall be tested prior to backfilling.
 - 3. The contractor shall be responsible for any damage to the completed work due to improper repairs of existing site utilities.
 - 4. Electrical splices:

- a. Damaged electrical lines shall be replaced from existing pull boxes or facilities. Splices shall only be made with the express permission of the Owner.
- b. Damaged irrigation wiring may be spliced with wire connectors. Splices in wiring run shall have a utility box placed over the splice.

END OF SECTION

SECTION 32 00 01
GENERAL EXTERIOR SITE CONSTRUCTION REQUIREMENTS
PRIOR TO, DURING AND POST CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To
 - 1. General procedures and requirements for Site Work.
 - 2. Accessibility Requirements

1.2 REFERENCES

- A. American Society For Testing And Materials (most recent revisions)
 - 1. ASTM D 1557, 'Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort'
 - 2. ASTM D 2216, 'Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock'
 - 3. ASTM D 2487, 'Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)'⁴
 - 4. ASTM D 6938, 'Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)'
 - 5. ASTM D 2950, 'Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods'
- B. Caltrans Test Methods (most recent revisions)
 - 1. CTM 216, 'Method of Test for Relative Compaction of Untreated and Treated Soils and Aggregates.'
 - 2. CTM 301, 'Method of Test for Determination of the Resistance "R" Value of Treated and Untreated Bases, Subbases and Basement Soils by the Stabilometer'
 - 3. CTM 304, 'Method of Preparation of Bituminous Mixtures for Testing'
 - 4. CTM 308, 'Methods of Test for Bulk Specific Gravity and Weight per Cubic Foot of Bituminous Mixtures'

1.3 DEFINITIONS

- A. Standard Specifications - Caltrans Standard Specifications **directly associated to the work.**
- B. Relative Compaction
 - 1. Ratio of field dry density as determined by ASTM D 2922 and ASTM D 3017 or 2216, and laboratory maximum dry density as determined by ASTM D 1557 or CTM 216F.
 - 2. Ratio of maximum field density as determined by ASTM D 2922 and the laboratory maximum density as determined by CTM 216G.
- C. Differing Subsurface or Physical Conditions
 - 1. Any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:
 - a. Is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided herein is materially inaccurate, or
 - b. Is of such a nature as to require a change in the Contract Documents, or
 - c. Differs materially from that shown or indicated in the Contract Documents, or

- d. Is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.
- 2. If Contractor believes that a differing subsurface or physical condition exists, Contractor shall promptly, after becoming aware thereof and before disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency), notify Owner's Agent in writing about such conditions. Contractor shall not further disturb such conditions or perform any Work in connection therewith until receipt of written order to do so.
- D. Unsuitable Material
 - 1. Soil or aggregate of such unstable nature as to be incapable of being compacted to specified density using ordinary methods at optimum moisture content; or
 - 2. Too wet to be properly compacted and circumstances not resulting from the Contractor's action or inaction prevent suitable in place drying prior to incorporation into the work; or
 - 3. Otherwise unsuitable for the planned use.
- E. Unstable - visible deflection or movement either horizontally or vertically under loading of construction equipment or while being proof rolled.
- F. Proof Rolling - Using a loaded 10-wheel dump truck, water truck, or equivalent to load soil by driving slowly over areas designated by the Owner's Agent to check for unstable areas.

1.4 QUALITY ASSURANCE

- A. Owner will pay for all testing required by the project specifications.
- B. Contractor shall pay for cost of all non-complying testing.

PART 2 PRODUCTS

- A. Controlled Low Strength Material (CLSM)
 - 1. Contains maximum of 94 lbs of cement per **cubic** yard.
 - 2. Compressive strength between 75 and 150 psi at 28 days.
 - 3. Fly ash is permitted.
 - 4. Air entrainment additives for workability.
- B. Cement Slurry - Conforms to Section 19-3.062 of Caltrans Standard Specifications.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Site Verification of Conditions
 - 1. 48 hours minimum prior to performing any work on site, contact Underground Service Alert (USA) to arrange for utility location services. If USA will not respond to the project site, the Contractor shall be required to provide a private locating service.
 - 2. Perform minor, investigative excavations to verify location of various existing underground facilities at sufficient locations to assure that no conflict with the proposed work exists and sufficient clearance is available to avoid damage to existing facilities.

3. Perform investigative excavating 10 days minimum in advance of performing any excavation or underground work.
4. Upon discovery of conflicts or problems with existing facilities, notify Owner's Agent by phone or fax within 24 hours. Follow telephone or fax notification with letter and diagrams indicating conflict or problem and sufficient measurements and details to evaluate problem.

3.2 PREPARATION

- A. Protection
 1. Spillage -
 - a. Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways.
 - b. Remove spillage and sweep, wash, or otherwise clean project, streets, and highways.
 2. Dust Control -
 - a. Take precautions necessary to prevent dust nuisance, both on-site and adjacent to public and private properties.
 - b. Correct or repair damage caused by dust.
 3. Existing Plants and Features - Do not damage tops, trunks, and roots of existing trees and shrubs on site which are intended to remain. Do not use heavy equipment within branch spread. Interfering branches may be removed only with permission of Owner's Agent. Do not damage other plants and features which are to remain.
- B. If specified precautions are not taken or corrections and repairs made promptly, Owner may take such steps as may be deemed necessary and deduct costs of such from monies due to Contractor. Such action or lack of action on Owner's part does not relieve Contractor from responsibility for proper protection of the Work.
- C. Contractor shall comply with all local, state, and federal storm water protection regulations.

3.3 SURVEYING & LAYOUT

- A. Benchmark – Project Plans will provide either a permanent or temporary benchmark.
- B. Contractor shall provide all surveying and layout.
- C. Contractor shall provide 2 personnel as requested by the Owner's Agent to perform quality assurance testing including stringlining of subgrades and verification of grades. Stringline and engineers level (or laser level) shall be provided by the Contractor and be available at all times during site work.

3.4 REPAIR / RESTORATION

- A. Adjust existing covers, boxes, and vaults to grade.
- B. Replace broken or damaged covers, boxes, and vaults.
- C. Independently confirm size, location, and number of covers, boxes, and vaults which require adjustment.
- D. Advise Owner's Agent of damage to underground site utilities. Address utility repairs per Section 02 41 15 "Site Utility Repair".

- E. Site Cleaning Immediately Prior To Acceptance
 - 1. All surfaces shall be broom clean and free from any accumulation of debris.
 - 2. Clean tack coat on concrete surfaces. Tack coat within 1 inch of pavement on curbs or gutter is not required to be cleaned.
 - 3. Remove all traffic control devices, excess materials, debris and signage from site.
 - 4. Remove all debris and sediment from the existing storm drain structures.
 - 5. Clean existing through-curb drain pipes using ordinary methods such as a garden hose with extension pipes.
 - 6. Bring clogged or damaged storm drain pipes or structures to attention of Owner's Agent.
 - 7. Replace any disturbed landscaping. Backfill planters with clean topsoil and replace surface dressing or mulch in kind.
 - 8. Remove all concrete debris and splatter.

3.5 ACCESSIBILITY REQUIREMENTS

- A. Work shall comply with the following code requirements:
 - 1. Title 24, CCR: California Building Code.
 - 2. Latest Edition of Uniform Building Code including California Amendments.
 - 3. American with Disabilities Act.
 - 4. Code requirements shall supercede plans or specifications.
- B. Coordination of Work
 - 1. Coordinate work elements to provide code compliance.
- C. Accessible Travel Paths
 - 1. Includes unloading zones, crosswalks, and sidewalks.
 - 2. Excludes ramps and landings.
 - 3. Maximum cross slope of 2 percent.
 - 4. Maximum longitudinal slope of 5 percent.
- D. Ramps and Landings
 - 1. Includes all travel paths between 5 and 8.33 percent.
 - 2. Provide handrails.
 - 3. Provide wheel curbs or wheel rails.
 - 4. Provide landings at beginning, end and every 30 inches of vertical rise. Landings shall be a minimum of 72 inches long, the width shall match the travel path, and the maximum cross slope shall be 2 percent.
- E. Curb Ramps
 - 1. Longitudinal slopes shall be between 6.7 and 8.33 percent.
 - 2. Cross slopes shall be less than 2 percent.
 - 3. Concrete score marks per code.
 - 4. Provide positive drainage.
 - 5. Detectable Warnings per ADA and codes.
- F. Door Landings
 - 1. Extend landing 42 inches beyond door swing, 24 inches beyond latch side of door.
 - 2. Maximum slope in any direction shall be 2 percent.
 - 3. Maximum drop at doorways of 1/4 inch from finish floor to landing.
- G. Accessible Parking Stalls and Unloading Zones
 - 1. Maximum slope in any direction of 2 percent.
 - 2. Unloading Zone shall be minimum 5 feet in width, 8 feet for Van Accessible Stalls.
 - 3. 6 foot Parking Bumpers shall be used to protect signs and overhang into accessible sidewalk as necessary to provide a 4 foot minimum sidewalk width.

- H. Signage
 - 1. Signage shall include required entrance signs and stall signage.
 - 2. Signage location preference shall be building first, landscape area second, and in pavement third.

3.6 FIELD QUALITY CONTROL

- A. If work has been interrupted by weather, scheduling, or other reason, notify Owner's Agent 24 hours minimum prior to intended resumption of work.
- B. Owner reserves the right to require additional testing to re-affirm suitability of completed work including compacted soils or aggregate bases which have been exposed to adverse weather conditions.

END OF SECTION

SECTION 32 11 23

AGGREGATE BASE

PART 1 GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Prepare pavement sub-grade as described in Contract Documents to receive pavement base and paving.
 - 2. Furnish and install pavement base in playground, driveway and parking areas as described in Contract Documents.
- B. Related Sections
 - 1. Section 32 00 01 - General Exterior Site Construction Requirements
 - 2. Section 31 23 00 - Excavation, Grading & Backfill
 - 3. Section 32 01 26.72 - Cold Planing

1.2 REFERENCES

- A. Caltrans Standard Specifications, Section 26, 2010

1.3 SUBMITTALS

- A. Product Data - Manufacturer's published product data on soil sterilant.
- B. Quality Assurance / Control
 - 1. Copies of test results from tests conducted to assure compliance to Contract Document requirements.
 - 2. Certificate of Compliance for Aggregate Base

1.4 PROJECT CONDITIONS

- A. Project Environmental Requirements
 - 1. Do not perform work during following conditions:
 - a. Presence of free surface water or damp pavement.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Aggregate Base
 - 1. New Aggregate Base - 19mm (3/4") Class 2 aggregate base in conformance with Section 26 of the Caltrans Standard Specifications.
 - 2. Onsite Recycled Aggregate Base
 - a. By the contract documents or by approval from Owners Representative, pulverized existing asphalt concrete pavement mixed uniformly with existing aggregate base.

- b. Conform to following gradation

<u>Sieve</u>	<u>Percent by Weight Passing Sieve</u>
2-1/2 inch	100
1-1/2 inch	95 - 100
3/4 inch	60 - 100
No. 200	2 - 12
- c. Quality Requirements as established by testing
 - 1) R-value - 78 minimum

PART 3 EXECUTION

3.1 PREPARATION

- A. Survey and stake paving surfaces to indicate grading required by Contract Documents.
- B. Sub-Grade
 - 1. Finish grade surface area to grades required by Contract Documents.
 - 2. In pulverized areas where grading will match existing, regrade onsite recycled base to match approximate grade of previous surface.
 - 3. Compact as follows:
 - a. Under sitework concrete, concrete swales, concrete pads or concrete pavement - compact to 90 percent relative compaction at optimum moisture +/- 2 percent.
 - b. Under HMA pavements, compact to 95 percent relative compaction at optimum moisture +/- 2 percent.
 - 4. Proof roll completed subgrade prior to compaction testing and stringlining to verify subgrade stability. Proof roll with full water truck or equivalent vehicle. Repair unstable, soft or yielding areas.

3.2 APPLICATION

- A. Site Tolerances
 - 1. Sub-Grade - 0.00 inches high. Measure using stringline from curb to curb, gutter, flat drainage structure, or grade break.
 - 2. Base - The average base thickness shall be equal or greater than the design thickness after compaction. The minimum base thickness shall be equal to the design thickness minus **0.03 ft**. The surface shall be graded to a finished tolerance of plus or minus 1/4 inch in 10 feet. Measure using stringline from curb to curb, gutter, flat drainage structure, or grade break.
- B. Aggregate or Onsite Recycled Base
 - 1. Grade to specified tolerances.
 - 2. Compact as follows:
 - a. Under sitework concrete, concrete swales, concrete pads or concrete pavement - compact to 90 percent relative compaction at optimum moisture +/- 2 percent.
 - b. Under HMA pavements, compact to 95 percent relative compaction at optimum moisture +/- 2 percent.
 - 3. Remove and replace segregated areas.
 - 4. Remove or repair improperly prepared areas as directed by Engineer.
- C.
 - 1.. Overlay Transitions -
 - a. Prepared per Section 32 01 26.72 "Cold Planing".
 - b. Place base course paving in full-depth transitions prior to overlay.

END OF SECTION

SECTION 32 12 16

HMA PAVING

PART 3 GENERAL

3.1 SUMMARY

- A. Includes But Not Limited To:
 - 1. Furnish and install Hot Mix Asphalt for areas as described in Contract Plans and Documents.

3.2 REFERENCES

- A. Caltrans Standard Specifications, Section 39, 2010

3.3 SUBMITTALS

- A. **HMA Submittals are due at Pre Construction Meeting**
- B. Product Data - Manufacturer's published product data on soil sterilant.
- C. Quality Assurance / Control
 - 1. Mix design of hot-mix asphalt mixture.
 - 2. Copies of test results from tests conducted to assure compliance to Contract Document requirements.
 - 3. Current verified **CEM 3513 including TSR value**

3.4 PROJECT CONDITIONS

- A. Project Environmental Requirements
 - 1. Do not perform work during following conditions:
 - a. Ambient, base, or pavement temperature below 50 degrees F.
 - b. Over-saturated base and sub-base materials.
 - 1) Base and sub-base to be wheel-rolled by loaded water truck to determine if any yielding occurs under the loading. If deflection is observed, do not perform paving until grade is stable and unyielding.

PART 4 PRODUCTS

4.1 MATERIALS

- A. Pavement
 - 1. Asphalt Binder - PG 64-10
 - 2. Aggregates

- a. 3/4" Type A used for HMA base courses of 2-1/2 inches or thicker.
- b. 1/2" Type A used for base courses less than 2-1/2 inches, but greater than or equal to 1-3/4 inches and surface course in vehicle traffic areas.
- c. 3/8" Type A used for leveling courses and surface courses in playgrounds and other pedestrian areas.

B. Tack Coat

1. Tack coat shall be utilized and will be emulsified asphalt Grade RS-1, RS-1h, SS-1, or SS-1h and shall conform to Section 94, 'Asphaltic Emulsions', of the Standard Specifications.

4.2 MIXES

A. Current verified and **PEI approved CEM 3513**

1. Mix voids targeted at 3.5%.
2. TSR to be minimum 70 in accordance with CTM 371.

PART 5 EXECUTION

5.1 PREPARATION

A. HMA Paving

1. **Use self-propelled laydown machine for all surface courses. Laydown machine for finish course shall be equipped with automated depth and grade control.** Base courses for digouts or stabilization areas may be placed by other mechanical means that will not destabilize subgrade.
2. Heat joints if laid more than 3 hours previously.
3. Compaction

a. Modify 39-2.03A Testing as follows:

"Quality Characteristic: Percent of maximum theoretical density (%) for HMA Type A to 92% to 96%. Retain footnotes e & f. Add the footnotes k through m to this requirement:

k. Perform testing in accordance with CT 375 for acceptance, except CT 309 shall replace TMD testing.

l. Maximum lot size shall be 500 tons

1) Minimum 3 test sites per location, 1 test for each 50 tons thereafter.

2) Each street segment or pavement area shall be an independent lot(s).

3) Compaction will be the average compaction for the street or pavement area.

m. **Failing tests shall be verified by coring.** If requested by the Contractor. Contractor obtains cores at locations randomly determined by Engineer. Engineer tests cores.

1) If requested by the Contractor and approved by the Engineer, non-nuclear gauges may be substituted for use in CT 375.

- b. If cores are passing, Engineer pays cost of core sampling and core testing. If cores are failing, Contractor pays for testing and core sampling. If the core density testing produces both passing and failing cores, the cost will be prorated

between the Owner and Contractor.

- c. The table for deductions indicated in the referenced Caltrans Section 39 shall apply to individual cores. The following table shall apply to deductions for average compaction of a lot:

Reduced Payment Factors for Percent of Maximum Theoretical Density			
HMA Type A Percent of Maximum Theoretical Density	Reduced Payment Factor	HMA Type A Percent of Maximum Theoretical Density	Reduced Payment Factor
92.0	0.0000	96.0	0.0000
91.9	0.0125	96.1	0.0125
91.8	0.0250	96.2	0.0250
91.7	0.0375	96.3	0.0375
91.6	0.0500	96.4	0.0500
91.5	0.0625	96.5	0.0625
91.4	0.0750	96.6	0.0750
91.3	0.0875	96.7	0.0875
91.2	0.1000	96.8	0.1000
91.1	0.1125	96.9	0.1125
91.0	0.1250	97.0	0.1250
90.9	0.1375	97.1	0.1375
90.8	0.1500	97.2	0.1500
90.7	0.1625	97.3	0.1625
90.6	0.1750	97.4	0.1750
90.5	0.1875	97.5	0.1875
90.4	0.2000	97.6	0.2000
90.3	0.2125	97.7	0.2125
90.2	0.2250	97.8	0.2250
90.1	0.2375	97.9	0.2375
90.0	0.2500	98.0	0.2500
< 90.0	Remove and Replace	> 98.0	Remove and Replace

- d. Field compaction testing performed in accordance with CTM 375 with a minimum of five tests per lot and one test per 50 tons.
- e. Roll with powered equipment capable of obtaining specified density and smoothness.
- f. **Execute initial compaction rolling prior to mix cooling below 250 degrees.** Complete finish rolling so visibility of joints is minimized as soon as possible after intermediate rolling and while asphalt paving is above 120 deg F surface temperature.
- g. **HMA that arrives at the job site at 260 degrees or below shall be rejected.**

Finish

- a. Surface shall be uniform with no 'birdbaths'. Leave finished surfaces clean and smooth. Variations from specified grades shall not exceed 1/2 inch. When tested with 10 foot straight edge, surface of complete work shall not contain irregularities in excess of 1/4 inch.
- b. Completed surface shall match the texture of the machine laid mat. Areas worked by raking shall have coarse aggregate removed rather than pushed back onto the mat. Any areas of coarse or segregated surface shall be remedied immediately and prior to finish rolling. **Failure to comply with this provision shall cause all paving to stop until mat surface corrections are performed.**

4. Thickness Tolerances

- a. Total HMA thickness less than or equal to 4 inches.
 - 1) **Minimum thickness shall be equal to or greater than design thickness**
- b. Total HMA thickness greater than 4 inches.
 - 1) **Minimum thickness shall be equal to or greater than design thickness**

PART 6 PAYMENT

Payment for HMA paving shall be lump sum basis, including but not limited to digouts, overlays, pavement removal and replacement, base course paving in full-depth transitions, and other items of work, and no separate payment will be made.

END OF SECTION

SECTION 31 23 00

EXCAVATION, GRADING & BACKFILL

PART 1 GENERAL

1.1 SUMMARY

- A. Includes But Not Limited To
 - 1. Perform rough and finish grading work required to prepare site for construction as described in Contract Documents.
 - 2. Perform trench excavation and backfill for site utilities.
 - 2. Perform excavating and compacting included in Project not covered under other Sections.
- B. Related Sections
 - 1. Section 02 41 13 - Site Demolition
 - 2. Section 32 00 01 - General Exterior Site Construction Requirements

1.2 QUALITY ASSURANCE

- A. Investigation
 - 1. **Contractor shall schedule a pre-construction meeting with Owners Representative to discuss designed grades specific to this phase of project.**
 - 2. Identify benchmark to be used in establishing grades and review Contract Document requirements for grades, fill materials, and topsoil.
 - 3. Examine site to pre-plan procedures for making cuts, placing fills, and other necessary work.
- B. Proof Rolling
 - 1. Contractor shall proof roll keyways, fills and subgrades when requested to do so by Owner's representative.
- C. Compaction Testing
 - 1. Contractor shall schedule compaction testing with Owner's Agent at least 48 hours prior to required testing.
 - 2. Contractor shall provide construction equipment to prepare testing sites. Minimum equipment shall be a rubber tired backhoe or equivalently weighted rubber tired machine.
 - 3. Contractor shall recompact all test locations if necessary.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Site Material - Existing excavated material on site which has been identified as not being unsuitable as defined by Section 32 00 01 is suitable for use as fill material or backfill where allowed.
- B. Imported Fill/Backfill
 - 1. Equal to or greater than quality of onsite material in terms of "R" Value, but not less than R=25.

2. Plasticity Index less than 15 or no expansion pressure per CTM 301.
- C. Imported Topsoil
1. Fertile, loose, friable soil meeting the following criteria:
 - a. pH between 5.5 and 7.7
 - b. Soluble Salts - less than 2.0 mmhos/cm
 - c. Sodium Absorption Ratio (SAR) - less than 3.0
 - d. Organic Matter - greater than 1 percent
 2. Physical Characteristics:
 - a. Gradation as defined by USDA triangle of physical characteristics as measured by hydrometer.
 - Sand - 15 to 60 percent
 - Silt - 10 to 60 percent
 - Clay - 5 to 30 percent
 - b. Clean and free from toxic minerals and chemicals, noxious weeds, rocks larger than 1-1/2 inches in any dimensions, and other objectionable materials.
 - c. Soil shall not contain more than 2 percent of particles measuring over 2.0 mm in largest size.
- D. Trench Backfill – CLSM per Section 32 00 01
- E. Drain Rock
1. Drain rock material shall meet the following gradation requirements:

<u>Screen Size</u>	<u>Percentage passing</u>
1-1/2"	100
3/4"	5 (max.)
No. 200	2 (max.)

PART 3 EXECUTION

3.1 PREPARATION

- A. Before making cuts, remove topsoil over areas to be cut and filled that was not previously removed by stripping. Stockpile this additional topsoil with previously stripped topsoil.
- B. Keyways for Fills
 1. Prepare keyway at toe of fills.
 2. Keyways shall extend a minimum of 1.5 feet below adjacent undisturbed ground.
 3. Keyways shall be a minimum of 6 feet in width.
 4. Keyways shall slope between 0 and 4 percent toward the fill.
 5. The bottom of the keyway shall be scarified, moisture conditioned and compacted to 90 percent relative compaction a minimum depth of 6 inches.
 6. Proof roll for unstable or unsuitable soils.

3.2 PROTECTION

- A. General: Open excavations, trenches, and the like shall be protected with fences, covers, or railings as required to maintain safe pedestrian and vehicular traffic passage.
- B. Erosion of newly backfilled areas shall be prevented during construction. Settlement or washing that occurs in backfilled areas shall be repaired and grades reestablished to the required elevations.

- C. Contractor shall comply with all local, state and federal storm water protection regulations.

3.3 PERFORMANCE

- A. Tolerances
1. Maximum variation from indicated grades for rough grading shall be **+/- 0.05 foot**.
 2. Grading shall not vary from the negative to positive tolerances within 50 feet.
 3. Make proper allowances for final finish grades of pavement, top soil, planting areas or other structures.
- B. When existing grade around existing plants to remain is higher than new finish grade, perform regrading by hand. Do not expose or damage existing shrub or tree roots.
- C. Excavation
1. Maximum cut slopes shall be 2H:1V or as shown on plans.
 2. Round off top 3 feet of cut slopes
 3. Do not overcut slopes by more than 0.5 feet measured perpendicularly from the cut slope.
 4. Protect existing trees and improvements from equipment damage.
 5. Finish slopes shall be graded smooth.
 6. Drainage: Ensure proper drainage in and around excavation area. Do not allow water to accumulate in excavated areas. Water in excavation areas shall be removed by pumps or other means.
 7. Excavated material becomes property of the contractor.
 - a. When fill is required elsewhere on site, Contractor shall use excavated material first prior to importing additional material, unless excavated material is deemed unusable by the Owner's Agent.
 - b. If not called for reuse elsewhere on the site, excavated material will be disposed of by the Contractor in a legal manner.
- D. Over-excavation
1. Excavations below indicated depths will not be permitted, except to remove unsuitable material as identified in Section 32 00 01 of these Specifications.
 2. Satisfactory material removed below the depths indicated without specific direction from the Owner's Agent shall be replaced at no additional cost to the Owner to the indicated excavation grade. Replacement material shall be approved by Owner's Agent prior to performing the work.
- E. Trenching
1. Excavate to depth and alignment as shown on plans.
 2. Bottom of trench shall be accurately graded to provide required slope and shall be stabilized if necessary, to provide a firm pipe bed.
 - a. Recesses shall be excavated to accommodate bells so that the pipe will be uniformly supported for the entire length.
 3. Rock, where encountered, shall be excavated to a depth of 6 inches below the bottom of the pipe and the void backfilled with clean fill sand.
 4. No joint trenching is allowed unless otherwise shown on drawings.
 5. Provide shoring as required by Cal OSHA.
 6. Trench width shall equal pipe width plus 6 inches unless otherwise shown on plans.

F. Subgrade Preparation

Site Tolerances

1. Maximum variation from indicated grades for rough grading shall be **+/- 0.05 foot**.
2. Grading shall not vary from the negative to positive tolerances within 50 feet.
3. Make proper allowances for final finish grades of pavement, top soil, planting areas or other structures.
4. If soft spots, water, or other unusual and unforeseen conditions affecting grading requirements are encountered, stop work and notify Owner's Agent.

G. Fill Construction

1. Uniformly moisture condition fill material to between optimum plus 3 percent optimum moisture prior to placing in fill.
2. Place fills in maximum loose lifts of 8 inches.
3. Compact fills to 90 percent relative compaction under concrete flat work areas; compact to 95 percent relative compaction under asphalt concrete paving. In landscape areas, compact to 85 percent relative compaction (do not over-compact).
4. Correct any unstable areas.
5. Compact fill slopes after trimming with 3 passes of a sheepsfoot roller or track roll.
6. No fill or backfill material shall be placed during adverse weather conditions that will alter the moisture content to above optimum level.
 - a. Approved compacted subgrades that are disturbed by adverse weather or by the Contractor's actions shall be scarified and re-compacted to the required density prior to further construction thereon.

H. Trench backfill

1. CLSM or Cement Slurry per Section 32 00 01 of these Specifications, and as shown on Plans.
2. Do not perform any trench backfill until lines have been inspected and/or tested by Owner's Agent and authorization has been given to proceed by said Agent.

I. Finish Grading

1. Do not start finish grading until rough grading tolerances are met.
2. Prior to finish grading or adding topsoil to planters, dig out weeds by roots and remove rocks, concrete, asphalt, wood, forming material, wire, rubble, sticks, etc.
3. Prior to placing topsoil, remove aggregate base down to native soil in planting areas.
4. Excavate planting areas to provide the following minimum topsoil depths below adjacent concrete or finish surfaces:
 - a. Lawn and Groundcover Planting Areas - 7 inches minimum
 - b. Shrub Planting Areas - 14 inches minimum.
5. Redistribute approved existing topsoil stored on site from stripping per Section 02 41 13.
6. Add imported topsoil as necessary to provide required topsoil depth.
7. Fine grade topsoil 1 inch minimum to 2 inches maximum below top of concrete or finish surfaces, unless shown otherwise on plans. Rake smooth and remove all lumps, rocks, etc.
8. Provide a minimum of 8 inches clearance from finish floor at buildings or wood structures.
9. Slope away from buildings at ½ inch per foot for a minimum of 5 feet.
10. Fill low spots and pockets with topsoil and grade to drain.

J. Clean up

1. Upon completion of the work under this section, Contractor shall remove from the

premises all surplus materials, tools, equipment, trash, rubbish, left-over material and debris resulting from the work at his own expense and leave the site in a clean and neat condition satisfactory to the Owner's Agent.

END OF SECTION