For Bid

Removal Action Workplan
Corporation Yard Soil Removal Action
Construction Drawings and Specifications

Berkeley Global Campus at Richmond Bay, Richmond, California

Richmond Field Station Site

CALIFORNIA STATE FIRE MARSHAL

- ☐ Approved
- ☒ Approved as noted (No resubmittal required)
- ☐ Make corrections noted (Resubmit for record)
- ☐ Not Approved (Revise and resubmit)
- ☐ Not reviewed (Insufficient data submitted)

APPROVAL OF THIS PLAN DOES NOT AUTHORIZE OR APPROVE ANY OMISSION OR DEVIATION FROM APPLICABLE REGULATIONS. FINAL APPROVAL IS SUBJECT TO FIELD INSPECTIONS. ONE SET OF APPROVED PLANS SHALL BE AVAILABLE ON THE PROJECT SITE AT THE TIME OF INSPECTION.

REVIEWED BY _____ DATE July 10, 2015

Prepared for

University of California, Berkeley

June 26, 2015

Prepared by

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CERTIFICATION

Berkeley Global Campus at Richmond Bay
RFS Site, Corporation Yard Removal Action
Project No. 91335A

Bidding Documents Prepared By:

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Signed: Steve Krueger Date: 25 June 2015

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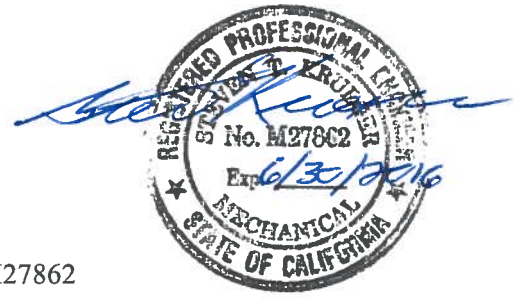
Title: Project Engineer



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SECTION 01010
SCOPE OF WORK

PART 1 - GENERAL

1.01 NAME, LOCATION AND ACCESS TO PROJECT

A. Project Location: Berkeley Global Campus at Richmond Bay, Richmond Field Station (RFS) Site, University of California, Berkeley (UCB).

B. Work Location: Former Richmond Field Station Site, University of California, Berkeley, former transformer locations and Corporation Yard.

C. Access: Permission for access to the site may be revoked for any and all persons who violate the University traffic regulations and project-specific traffic control plan including speed limits, parking restrictions, and traffic pattern requirements. All Contractor's personnel, operations affiliates and delivery personnel shall be made aware of and shall comply at all times with campus traffic regulations.

1.02 DESCRIPTION OF WORK

A. General Requirements: The Contractor shall provide qualified supervision, lead-men, and workmen; and shall supply all labor, materials, equipment, services, transportation, insurance, licenses, building permits and all other items and work required to properly execute the intentions of the Contract.

B. Site Background: The Regents of the University of California (UC) approved establishment of a new major research campus on properties it owns in Richmond, California, composed of portions of the Former Richmond Field Station (RFS) and the Regatta Property located west of the RFS. The Berkeley Global Campus at Richmond Bay (BGC) will provide for the development of additional facilities for UC Berkeley and the Ernest Orlando Lawrence Berkeley National Laboratory (LBNL) for academic teaching, applied research, and collaborations with private industry focused on energy, environment, and health. UC Berkeley has been conducting investigation and cleanup actions at the Former RFS under the oversight of the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), in compliance with the Site Investigation and Remediation Order for the former RFS Site, Docket No. IS/E-RAO 06/07-004, dated September 15, 2006 (RFS Site Investigation and Remediation Order). Based on the information developed during site characterization activities at the Former RFS Site, UC Berkeley determined that further action is required for the RFS due to elevated concentrations of pyrite cinders-related metals (arsenic and lead), polychlorinated biphenyls (PCB), polycyclic aromatic hydrocarbons, and dioxins detected in soil samples in the Corporation Yard Area. The summary of the site investigation is available in the *Site Characterization Report, Proposed Richmond bay Campus, research, Education, and Support Area and Groundwater within the Richmond Field Station Site*, 28 May 2013, Tetra Tech. The excavation areas have been distinguished within the specifications and drawings of those considered PCB-impacted soils and those considered BAP and dioxin-impacted soil to be consistent with how the areas are described within the *Final Removal Action Workplan, Richmond Bay Campus, Richmond, California*, 18 July 2014, Tetra Tech.

C. PCB-Impacted Soils: Soil with concentrations of total PCBs greater than the remedial goal of 1 milligrams per kilogram (mg/kg) will be excavated. Based on sampling conducted to date, five excavation areas have been identified. The PCB excavation areas include seven areas within the Corporation Yard shown on Drawing C-2 and one area associated with transformers near Building 150 shown on Drawing C-5.

D. The proposed excavation depths extend a half-foot beyond the depth of the sample with PCB concentrations exceeding the Toxics Substances Control Act (TSCA) criterion, and confirmation samples collected by the Owner's Representative will evaluate whether impacted soils exceeding the criteria are still present and additional soil be removed from the excavation area. The estimated in-place volume of PCB-impacted soils for excavation and off-site disposal based on current characterization data within the Corporation Yard is 12 cubic yards (cys) and the estimated in-place volume of PCB-impacted soils for excavation and off-site disposal associated with Building 150 is 3 cys.

E. Benzo(a)pyrene-equivalent doses [BAP (EQ)]- and Dioxin-Impacted Soils at the Corporation Yard: Soils with chemical concentrations exceeding the remedial goals will be excavated and disposed of off-site at an appropriately permitted landfill facility. Based on previous characterization data, PCBs; BAP (EQ); dioxins; and pyrite cinders-related metals, arsenic, and lead; are present in soils at the Corporation Yard at concentrations exceeding remedial goals. Based on sampling conducted to date there are four excavation areas identified that are impacted by BAP (EQ) and dioxins within the Corporation Yard shown on Drawing C-2. The estimated in-place volume of BAP and dioxins-impacted soil within the Corporation Yard for excavation and off-site disposal based on current site characterization data is 34 cys.

F. Scope of work for the proposed excavation areas includes, but is not limited to, the following: excavation, storage, and disposal of soil from various RFS locations, as indicated on provided drawings; and backfill and regrade excavation areas. Contractor shall anticipate performing the following sequence of work:

   a. Submit preconstruction documentation including a Work Plan. The Work Plan shall include a Site Specific Health and Safety Plan, Storm Water Pollution Prevention Plan, Traffic Control Plan, and Site Work Plan.

   b. Site survey to layout the excavation areas and to establish baseline grade elevations.

   c. Mobilization to the site including personnel, equipment, set up temporary facilities, delineate the exclusion and support zones, and secure the work area.

   d. Establishing a decontamination zone and decontaminating equipment and personnel prior to exiting the site.

   e. Implementing erosion and dust control procedures during construction.

   f. Excavating soils that exceed project cleanup criteria delineated on the contract drawings.

   g. On hold pending the results of confirmation soil sampling and analytical analyses conducted by the Owner's Representative to evaluate whether the excavated areas meet the required cleanup goals. Over excavation and sampling as required to meet the site environmental cleanup goals. The analytical samples will be submitted to the analytical laboratory on expedited turn around times.

h. Storage and disposal of excavated soil.

i. Backfilling excavation areas. Clean soil for backfilling excavation areas will be supplied at no cost to the Contractor; however, the Contractor's bid shall include costs for transporting the clean soil from on-site stockpiles to the various excavations for placement and grading, and re-constructing erosion control of the soil stockpile (placing new straw wattles if needed). The location of the clean, on-site stockpiles are shown on the project drawings.

j. Grading backfill to match existing grade.

k. The Contractor and Owner's representative shall work together to coordinate the actual timing of the work on the official Notice-to-Proceed and calendar day requirements. Owner reserves the right to vary the sequence and timing of work upon written notice to Contractor.

l. Air quality and dust monitoring during removal activities will be conducted by UC Berkeley.

G. Alternate Bid: The Contractor shall provide an alternate bid to conduct soil removal near Building Number 150 as shown on Drawing C-5. All work associated with Excavation Building 150 will be in compliance with these specifications. If it is decided to proceed with the alternate bid it will be awarded along with the original contract work and conducted during the same mobilization and work effort.

H. Intent of Document: It is the intent of the Contract Documents to include everything necessary for the proper completion of the project. Work necessary for completion or inferred by the Documents, even though not specifically shown or specified, shall be supplied.

I. Where removal of existing construction is required for performance of any work under this Contract, removal and replacement will be accomplished whether shown or not.

1.03 INTERPRETATIONS OF TERMS

The term "Owner's Representative," used in these specifications, is synonymous with the "University Representative." "As directed," "as required," "as permitted," "approved," "acceptable," "satisfactory," means by or to the Owner's Representative.

1.04 DEFINITION OF TERMS USED

1. Owner	The Regents of the University of California
2. Owner's Representative: (Project Manager):	Karl Hans University of California, Berkeley Office of Environment, Health & Safety University Hall 3rd Fl. #1150 Berkeley, CA 94720 (510) 643-9574 khans@berkeley.edu

3. Project Inspector: To Be Determined
   University of California
   Capital Projects
   2000 Carleton Street
   Berkeley, California 94720

4. Contractor: The successful bidder, to whom the Contract is awarded.

1.05 DEFINITIONS

The following terms, when used on the Drawings or in the Specifications, shall have the following meanings:

TERM	MEANING
Adequate; Careful; Proper; Sufficient; Suitable; Satisfactory	These terms refer to interpretation by Owner's Representative, and are subject to approval upon request.
Applicable Codes	"Codes listed in Section 01012" referencing the Regulatory Requirements.
Approved	"As approved by Owner's Representative."
As Directed	"As directed by Owner's Representative."
As Required	"As required by Applicable Code Requirements; by good building practice; by the conditions prevailing; by the Contract Documents; by Owner, or by Owner's Representative."
As Selected	"As selected by Owner's Representative."
By Others	Work on this Project that is outside the scope of Work to be performed by Contractor under this Contract, but that will be performed by Owner, other contractors, or other means.
Equal	Of same quality, appearance, and utility to that specified, as determined by Owner's Representative. Contractor bears the burden of proof of equality.
Furnish	"Supply only, not install (unless required to be provided or installed elsewhere in the Contract Documents)."
Include/Including	"Include/including, without limitation."
Install	"Install or apply only, not furnish (unless required to be provided or furnished elsewhere in the Contract Documents)."
Manufacturer's Directions, Instructions, Recommendations, Specifications	Manufacturer's written directions, instruction, recommendations, specifications.
Must; shall; to; will	When used as a directive to Contractor, these terms indicate a mandatory action.
Necessary	"Essential to completion of Work."
Owner-Furnished, Contractor Installed	"To be furnished by Owner at its cost and installed by Contractor as part of the work."
Project Site; Job Site	Geographical location of the Project.
Provide	"Furnish and install."
Shown	"As indicated on the Drawings".
Specified	"As written in the Contract Documents."
Submit	"Submit to Owner's Representative."

1.06 INCONSISTENCIES IN CONTRACT DOCUMENTS

In addition to the requirements of the General Conditions, if there is an inconsistency in the Contract Documents, the stricter, more stringent standards and requirements shall be followed at no additional cost to Owner.

1.07 PERMITS

1. Land use actions within projects owned and controlled by the UC Regents are not subject to local municipal permits, such as tree and grading permits. This approach is consistent with the conditions included in the LRDP California Environmental Quality Act (CEQA) document. The Contractor shall provide the following notifications and permits before implementation of the removal action:

    a. UC Berkeley will approve contractor personnel and subcontracts for access consistent with UC Berkeley policies.

    b. The Contractor shall notify UCB at least 21 days in advance of field work and UCB will notify the Department of Toxic Substances Control (DTSC) at least 14 days in advance of field work.

    c. On-site worker and employee notifications.

    d. Amend the existing Notice of Intent (NOI) and Storm Water Pollution Prevention Plan (SWPPP) or create a new NOI and SWPPP in compliance with the Construction General Permit and upload to the California State Water Resources Control Boards' Storm Water Multiple Application and Report Tracking System database.

2. The Contractor is not required to take out building permits for work done on University property.

1.08 SITE PLAN

The Contractor shall prepare a site plan indicating the proposed location and dimensions of any area to be fenced and used by the Contractor, the number of trailers and containers to be used, avenues of ingress/egress to the fenced area and details of the fence installation. Any areas which may have to be graveled to prevent the tracking of mud shall also be identified. The Contractor shall also indicate the work zones and if the use of a supplemental or other staging area is desired. The site plan shall incorporate any relevant information provided on the project plans.

1.09 PARKING AND ACCESS TO SITE

1. Vehicular access to the site is shown on plans and shall be by routes on University property and project site as designated by the Owner's Representative.

2. Contractor employees will park privately-owned vehicles in an area designated by the Owner's Representative or within the designated work zones. Contractor employee parking must not interfere with existing and established parking requirements of BGC.

    a. All vehicles must observe posted hours of control and parking instructions.

    b. Overnight parking of personal vehicles is not permitted on University property.

C. Access to the site may be revoked for violations of University traffic regulations, including speed limits and parking restrictions.

3. Construction Staging Areas: The Contractor is allowed to use the work zones identified on the contract drawings for staging construction vehicles, equipment, excavated material and temporary facilities.

1.10 TRAFFIC

1. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Project Manager. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the State and local authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with public traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

2. Barricades: The Contractor shall erect and maintain temporary barricades to limit public access to hazardous areas. Such barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night.

1.11 NOTIFICATION

Notify Owner's Representative not less than two (2) working days in advance of any inspection, meeting or consultation requiring the Representative's presence.

1.12 WORK HOURS

1. The Work of this project shall be accomplished during the following hours only: Monday through Friday, 7:00 a.m. to 7:00 p.m., unless otherwise approved by the Owner's Representative.

2. No work shall be performed on Saturdays, Sundays or University holidays, except as otherwise specified.

1.13 WEATHER-CAUSED DELAYS

1. Time lost in the progress of the Work caused by stormy or inclement weather conditions shall not be considered an Excusable Delay as defined in the General Conditions, unless the aggregate of such lost time in any calendar month exceeds the average number of rain days for said month.

2. The average numbers of rain days when precipitation amounts are greater than 0.50-inch occur shall be based on the data published for Berkeley, California, by:

National Climatic Data Center
Climatic Services Branch
151 Patton Avenue
Ashville, North Carolina 28801-5001
Telephone: (828) 271-4800

The mean average of rain days shall be based on data covering the last ten years from this source.

1.14 SUPERINTENDENT

In addition to the requirements of the General Conditions:

1. Submit qualifications showing five (5) years minimum experience as Superintendent.

2. Failure to maintain a Superintendent on the Project site at all times work is in progress shall be considered a material breach of this Contract, entitling Owner to terminate the Contract or, alternatively, issue a Stop Work order until the Superintendent is on Project site. If, by virtue of issuance of said stop order, Contractor fails to complete the Contract on time, it will be assessed liquidated damages in accordance with the Agreement.

3. Superintendent approved for this Project shall be able to read, write and verbally communicate fluently in English.

1.15 SITE DECORUM

Contractor shall control the conduct of its employees so as to prevent unwanted interaction initiated by Contractor's employees with University staff or other individuals (except those associated with the Project), adjacent to the Project site. Without limitation, unwanted interaction by Contractor employees would include whistling at or initiating conversation with passerby. In the event that any Contractor employee initiates such unwanted interaction, Contractor shall, either upon request of Owner's Representative or on its own initiative, replace said employee with another of equivalent technical skill, at no additional cost to Owner.

1.16 NO SMOKING ON UNIVERSITY PROPERTY

1. The University has adopted a no-smoking provision in all campus buildings and on all University property. The Contractor, his forces and his employees will observe this requirement while performing work on University property.

2. No smoking shall take place within BGC.

3. Effective January 2014, smoking, the use of smokeless tobacco products, and the use of unregulated nicotine products (e.g., “e-cigarettes”) will be strictly prohibited in all campus indoor and outdoor spaces, including parking lots and private residential space.

1.17 RADIOS / MUSIC

The playing of radios or music on the BGC is prohibited at all times. The Contractor, his forces, and his employees will observe this requirement while performing work on the project site.

1.18 SANITARY FACILITIES

There are no sanitary facilities at the site which may be used by the Contractor. The Contractor will be responsible for providing adequate sanitary facilities at the site and for maintaining their cleanliness and utility.

1.19 JOB SIGNS AND PUBLICITY RELEASES

1. Advertising Signage: The use of Contractor or subcontractor advertising signage is prohibited. Do not display such advertising or job signs except as may be required for identification and deliveries.

2. Owner-Furnished Warning Signs: Whenever required by Owner's Representative, post Owner-furnished warning signs in locations as directed.

3. Do not release any information, story, photograph, plan or drawing relating information about the project to anyone, including press or other public communications medium.

1.20 PROJECT SECURITY

The Contractor is responsible for project security of its own and all subcontractor's materials, tools, equipment, supplies and partially completed construction.

1.21 HEALTH AND SAFETY

A. All staff, consultants, or contractors entering the exclusion or decontamination zones during the excavation activities shall read and comply with the requirements set forth in a site-specific HSP which will be submitted to DTSC. Subcontractors are required to either adopt the prime contractor's HSP or prepare one of their own. All contractors will be responsible for operating in accordance with the most current requirements of Title 8, California Code of Regulations, Section 5192 and Title 29, CFR, Section 1910.120 (29 CFR 1910.120), Standards for HAZWOPER. On-site personnel will be responsible for operating in accordance with all applicable regulations of the Occupational Safety and Health Administration (OSHA) as outlined in 8 California Code of Regulations General Industry and Construction Safety Orders and 29 CFR 1910 and 29 CFR 1926, Construction Industry Standards, as well as other applicable federal and state laws and regulations. All personnel working at the site shall have reviewed and signed the HSP, and a safety meeting shall be conducted at the beginning of each work day to review potential site hazards and safe working procedures.

B. For excavation depths that are greater than five (5) feet, the contractor will be required to submit to UC Berkeley EH&S a plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazards of caving ground during the excavation, as appropriate. The proposed plan will comply with the State of California Construction Safety Orders and Title 24 of the California Code of Regulations. If the detailed plan varies from such shoring system standards, it shall be prepared by a California-registered civil or structural engineer.

1.22 CLEAN-UP DURING CONSTRUCTION

The Contractor and all subcontractors shall maintain the job site in a clean, orderly fashion. Pick up and remove debris daily if required but not less frequently than weekly. If work under this Contract creates

dusty, dirty or unsightly conditions in adjacent areas, the Contractor will immediately clean up the affected areas.

1.23 NOISE, DUST AND VIBRATION CONTROL

1. Contractor shall note that adjacent facilities will remain in operation during the entire construction period and shall take all reasonable precautions to eliminate dust and minimize noise and vibrations.

2. Noise: Field activities during the proposed remedial action are not expected to exceed City of Richmond noise ordinance guidelines. Noise reduction measures, including using quiet construction equipment, particularly air compressors, will be used whenever possible. All construction equipment powered by internal combustion engines shall be properly muffled and maintained. All stationery noise-generating construction equipment such as tree grinders and air compressors are to be as far as is practical from existing residences. Unnecessary idling of internal combustion engines shall be prohibited. Sources of impulsive sound and jack hammers shall not be used on Sundays and holidays, except for emergencies.

3. Dust and Erosion Control: Disturbed soil areas and roadways shall be managed to prevent dust, spills to the ground or water, transport into storm drains, and exposure to people or the environment. Excavation, transportation, and handling of all soil must result in no visible dust at the fence line of the excavation. Any soil material proposed to be placed as fill, whether from an off-site source or on-site source will be kept covered or moist to facilitate eventual compaction and to control dust during earthwork operations. A water truck or water tank shall be utilized by the Contractor to supply water in sufficient quantity on the job site while earthwork operations are underway. Sufficient water will be applied to suppress dust while exercising care to avoid generating runoff to any area outside the project boundaries. Dust control measures will be implemented, as appropriate and necessary, beginning with site mobilization and continuing during all phases of the construction activities. Water will not be applied if there is a possibility of spreading contaminated soil or leaching contaminants from the soil or if it results in hazardous working conditions.

   Soil management will be in compliance with the SWPPP for stockpiling of soils (4LEAF, Inc. 2013), as modified for the action. Contractors will not be allowed to stockpile material containing or suspected to contain hazardous waste or contamination unless covered and protected from rain or wind erosion for the duration of the construction project. Stockpiles of material containing hazardous waste or contamination will be placed on plastic sheeting of adequate thickness to contain the soils or in roll off bins and will not be placed in areas that may be potentially affected by surface run-on or run-off. Contaminated and clean soils material will not be allowed to enter storm drains, inlets, or waters of the State. The plastic sheeting used to cover the soil must be anchored to the ground and weighted as necessary to securely and completely cover the stockpiled soil to prevent wind-blown dust from being generated.

4. If excavation of soils is to be conducted when rain is possible, the site work must be carefully executed to contain potentially contaminated surface water, accumulated storm water in excavations, muddy soils within the project area, and prevent off-site tracking of sediment and soils to BGC and adjoining City of Richmond roads. All stockpiled soil must be managed in accordance with the requirements outlined in the SWPPP and Section 5.1.4. ACCESS AND EXIT-WAYS

5. Do not interfere with use of or access to occupied portions of building or adjacent property outside of the work zones (exclusion zone, support zones, and decontamination zones) shown on the contract drawings.

1.24 WELDING AND BURNING

Welding and burning of steel shall be eliminated as much as possible. Where unavoidable, welding and burning shall be done with all possible precaution to avoid fire hazard. Contractor shall provide a fire watch for one-half (1/2) hour after burning stops. Contractor shall provide protection for all adjacent surfaces.

1.24 Add: Compliance with NFPA 51B is required.

1.25 SURROUNDING SITE CONDITION SURVEY

Prior to commencing the Work, Contractor and Owner's Representative shall tour the Project site together to examine and record any existing visible damage to existing adjacent buildings, concrete, asphalt pavement, and improvements. This record shall serve as a basis for determination of subsequent damage due to Contractor's operations, and shall be signed by all parties making the tour. Any cracks, sags, or damage to the adjacent buildings and improvements not noted in the original survey, but subsequently discovered, shall be reported to Owner's Representative.

1.26 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

1. Utility Clearance: Before excavation activities begin, the Contractor shall locate and document utilities through the services of a private underground utility location service, and a final visual inspection for subsurface utilities will be made, including a review of drawings and site markings. Because the BGC is private property, utility companies will not enter the site to respond to a notification from a ticket called into Underground Service Alert (USA). Underground utilities will be cleared and marked on the ground with indications (standard colors, letters, and numbers) of the assumed type of utility using a private utility locator with assistance from UC Maintenance and Facilities staff. The location and type of utilities will also be compared with the utilities shown on the contract drawings. This information will be provided to the University approval prior to excavation activities.

    a. Locate all known existing utility installations before proceeding with construction operations which may cause damage to such installations. The existing installations shall be kept in service where shown and damage shall be repaired at no increase in the Contract Sum.

    b. If any other structures or utilities are encountered, request Owner's Representative to provide direction on how to proceed with the work.

    c. If any structure or utility is damaged, take immediate action to ensure the safety of persons and property.

1.27 EXCAVATION AND TRENCHING

1. General Protection: Pursuant to Labor Code Sections 6705 and 6707, Contractor shall include in its base bid all costs incident to the provision of adequate sheeting, shoring, bracing or equivalent method for the protection of life and limb which shall conform to the applicable Federal and State Safety Orders.

2. Before beginning any excavation five (5) feet or more in depth, submit to the Owner's Representative a detailed plan showing the design of shoring, bracing, sloping or other provisions to be made for worker protection from the hazard of caving ground during excavations. Comply with the Standards established by the State of California Construction Safety Orders Title 24 of the California Administrative Code. If the detailed plan varies from such shoring system Standards it shall be prepared by a California-registered civil or structural engineer whose name and registration number shall be indicated on the Drawing. If a dispute arises as to whether the plan must be prepared by a California-registered civil or structural engineer, the Owner's Representative's determination of the matter shall be final and conclusive. The cost of required engineering services shall be borne by the Contractor and shall be deemed to have been included in the amount of bid for the work as stated in the Agreement.

3. Neither the review nor approval of any plan showing design of shoring, bracing, sloping or other provisions for worker protection shall relieve Contractor from his obligations to comply with Construction Safety order Standards and Title 24 CAC for design and construction of such protective work, and Contractor shall indemnify Owner and Owner's Representative from any and all claims, liability, costs, actions and a cause of action arising out of or related to the failure of such protective system. The Contractor shall defend the Owner, its officers, employees and agents and the Owner's Representative in any litigation or proceeding brought with respect to the failure of such protective systems.

4. The Contractor shall comply with Section 382 of the Civil Code of the State of California relating to lateral, general and sub-adjacent supports wherever structures or improvements adjacent to an excavation may be damaged by such excavation.

5. Contractors must still comply with the State of California Construction Safety Orders, Article 6 – Excavations, Trenches, Earthwork. The requirements of Article 6 apply whether the excavation, trench or earthwork is less than 5 feet, or 5 feet or more.

1.28 MATERIAL AND EQUIPMENT

1. General: All material and equipment incorporated in the Work shall be:

    a. New.

    b. In condition acceptable to Owner's Representative.

    c. Suitable for intended use.

    d. Keep materials clean, dry, and undamaged.

2. UL Label: Materials and equipment, for which UL standards have been established and their label service is available, shall bear the appropriate UL Label.

3. Manufacturer's Trade Marks and Names: Owner's Representative reserves the right to review and request the removal or redesign of manufacturers' trade marks and names on items of materials and equipment which will be exposed to view in the completed Work. Such removal or redesign shall be at no increase in Contract Sum.

4. Delivery of Materials: Deliver all materials in the original packages, containers or bundles bearing the name, brand, type and grade of material of the manufacturer or the supplier for whom the product is manufactured.

1.29 LAYING OUT OF THE WORK

Actual field conditions deviating from the Drawings shall be reported to Owner's Representative before proceeding, and Contractor shall bear the expense of corrective work necessitated by its failure to so report. Contractor shall employ the Owner's surveyor, Muir Consulting, Inc., to lay out the Work and set grades, lines, levels, and positions throughout the Project site. Muir Consulting, Inc. has conducted the previous surveys of the property and is familiar with the BGC benchmark locations and site requirements. Before beginning the Work, locate general reference points, establish monuments, and take action as is necessary to prevent their destruction; then lay out all lines, elevations, and measurements for buildings, grading, paving, utilities, and other parts of the Work. Verify figures and dimensions shown on the Drawings and accept responsibility for any error resulting from failure to so verify, including the cost of any additional re-surveying.

1.30 APPARATUS AND EQUIPMENT LOCATIONS

1. Locations of apparatus and equipment indicated on the Drawings (if any) are approximate only, and are subject to change to suit operational service as approved by Owner's Representative.

2. Furnish and install apparatus and equipment in a manner and in locations which keep openings and passageways clear. Make changes in locations of equipment and materials which may be necessary to accomplish these purposes as approved by Owner's Representative.

1.31 EXAMINATION OF EXISTING CONDITIONS

Verify measurements in field, as required, for work fabricated to fit job conditions. Before starting work, examine adjoining work on which installment is in any way dependent for perfect workmanship and fit. Give written description of any existing deficiencies detrimental to proper and timely installation of work.

1.32 CARE OF EXISTING FACILITIES

1. The Contractor shall be responsible for repair or replacement of existing facilities including any landscaping, paving, roads and sidewalks damaged as a result of the performance of this work. Any facilities or finishes damaged shall be repaired or replaced with materials and workmanship equivalent to that employed in executing the original work and to the satisfaction of the Owner's Representative.

2. The Contractor shall take care not to overload an existing structure by storing material, erecting shoring, placing equipment or other materials upon or against the building.

3. Do not park trucks, store materials or cross over landscaped areas. Any plant materials damaged as a result of the performance of this work will either be replaced with new plant materials equal in size to those damaged or by payment of an amount representing the value of the damaged material as determined by the Owner.

1.33 REPAIR OF EXISTING WORK

Whenever any cutting, removal, or alterations of existing work is required to form connections with new work or otherwise meet the requirements of the Contract Documents, perform such work so as not to damage the work that will remain in place. Perform patching and repairs occasioned thereby using materials, construction details, and finishes matching those of the existing work as closely as possible and to the approval of Owner's Representative.

1.34 TEMPORARY FIRE PROTECTION SYSTEM

Where existing fire protection system of the building is inadequate or impaired by construction operations, provide temporary fire protection for the building during the course of construction.

1.35 TEMPORARY CONSTRUCTION UTILITIES

1.34 Add: The temporary fire protection shall be approved by the CFM

1. The Contractor shall be responsible for providing temporary facilities required for construction. Materials may be new or used, must be adequate for the required usage, not create unsafe conditions, and not violate applicable codes and standards. Contractor shall be fully responsible for providing such service and shall pay all costs required therefore. Work to be done in accordance with applicable California Administrative Codes.

2. Electricity for construction use is available at no cost to the Contractor. Water for construction use is available from water spigots at the buildings at no cost to the contractor. If additional water is required, construction water is available from an on-site fire hydrant at no cost to the Contractor but the Contractor shall be responsible for paying for securing a fire hydrant meter from EBMUD's Oakland office.

3. The Contractor shall furnish, wire, install and maintain temporary electric lights wherever it is necessary to provide illumination for the proper performance and observation of the work.

4. Use backflow preventers on water lines at point of connection to Owner's water supply. Backflow preventers are to comply with requirements of the Uniform Plumbing Code.

1.36 UTILITY SHUTDOWNS AND INTERRUPTIONS

1. Give the Owner's Representative a minimum of fourteen (14) days' notice, in writing, of need to shut off existing utility services or equipment interruptions. The Owner's Representative shall set exact time for and execute shutdown. All work required to re-establish service such as connections, line taps, and cable splicing shall be performed by the Contractor.

2. Obtain Owner's Representative approval at least fourteen (14) days in advance of deliveries of material or equipment or other activities which may conflict with Owner's use of facilities.

3. Excessive scheduling of utility shutdowns or repeated requests to schedule and subsequent cancellation or re-scheduling of shut downs may be subject to back-charges to the Contractor in accordance with Section 01010.

1.37 TEMPORARY JOB OFFICE

1. The Contractor may provide and maintain field office facilities within the construction area at the designated site. University office and warehouse facilities will not be available to the Contractor's personnel.

2. The Contractor shall maintain a complete set of Contract Documents, all reviewed shop drawings, submittals, samples, and all executed Change Orders on the job site.

1.38 PROJECT RECORD DOCUMENTS, "AS BUILT" DRAWINGS

1. Maintain at the job site, a complete record set of up-to-date Contract Documents. The prints shall show actual installation by dimension, elevation or other reference, where changed from the original Contract bid documents.

2. The Contractor shall cross-reference all changes approved by the Owner’s Representative on the record set of Contract Documents, noting the type and number of the document authorizing the change.

3. The Contractor shall make “as-built” drawings shown on the exact measured location of concealed piping, duct work, and major electrical conduits. Any modifications will be shown on “as-build” drawings.

1.39 CONTRACTOR'S SUBMITTALS

1. Within ten (10) days after receipt of Notice of Apparent Lowest Responsible Bidder, submit detailed Preliminary Contract Schedule and Preliminary Cost Breakdown with other required documents to Owner, and to Owner’s Representative for approval.

2. Project Schedule: Submit detailed project schedule to Owner's Representative for approval as required in Specification Section 01019 – Scheduling Requirements and in the General Conditions.

3. Schedule of Values (Cost Breakdown): Submit detailed project Schedule of Values to Owner's Representative for approval as required in Specification Section 01010 – Summary of Work, paragraph 1.41 and in the General Conditions.

4. Work Plan

5. Submittal Schedule: Submit detailed Submittal Schedule to Owner's Representative for approval.

6. Shop Drawings: For detailed requirements refer to individual sections.

1.40 CORRESPONDENCE

1. Contractor's correspondence (any written document other than a full-size drawing) directed to Owner's Representative shall be distributed as follows:

    a. Original and three copies to Owner's Representative.

    b. Three copies (minimum) to Owner.

2. Owner's Representative's correspondence (any written document other than a full-size drawing) directed to Contractor shall be distributed as follows:

    a. Original to Contractor.

    b. Three copies (minimum) to Owner.

1.41 COST BREAKDOWN

1. Within ten (10) days after receipt of Notice of Apparent Lowest Responsible Bidder, submit detailed Preliminary Contract Schedule and Preliminary Cost Breakdown with other required documents to Owner, and to Owner’s Representative for approval.

2. The Contractor shall include a separate allowance (or line item) identified as "project close out" with a value attributed to this item of not less than 2% of the Contract amount.

3. The Contractor shall also include a separate allowance (or line item) identified as "Stormwater Pollution Prevention Plan Implementation” with a value attributed to this item of not less than 2% of the Contract amount.

4. The Contractor shall not submit a Payment Application to the Owner or to the Owner's Representative prior to the Owner's Representative's approval of the Cost Breakdown submittal.

1.45 PAYMENT BY OWNER

1. Summarize quantities and percentages of completion, agreed upon by Contractor and Owner's Representative, on the Cost Breakdown contained in the Application for Payment.

    a. Contractor will submit billings on the Application For Payment contained in the Exhibits of the construction bidding documents.

    b. Four original (i.e., ink-signed) and complete copies of the Payment Application will be submitted by Contractor to Owner’s Representative.

    c. Owner's Representative will submit three original (i.e., ink-signed) and complete copies of the Certificate for Payment and Payment Application to Owner (labeled "Attention Contract Administrator").

2. In accordance with Article 5 of the General Conditions of the Contract, the Owner will make payments within twenty (20) days after Owner's receipt of an original valid Application for Payment, an original valid Certificate for Payment, and all required supporting data.

1.46 OWNER BACK CHARGES

1. The Contractor will be cognizant of costs to the Owner caused by execution of the work of this contract. The following activities are costs to the Owner:

   a. Laboratory Testing.

   b. Utility Shutdowns.

   c. Inspections.

2. Excessive or repeat scheduling and canceling of activities may result in back charges to the Contractor. If excessive or repeat scheduling of Owner activities occurs, the Owner's Representative will notify the Contractor in writing, and allow five days' notice for the Contractor to "cure." Failure of the Contractor to "cure" excessive or repeat scheduling of activities beyond the five-day notice period may cause the Owner to back-charge the Contractor for costs of these activities. Back charges will be deducted from amounts owing to the Contractor.

1.47 OWNER'S SUPERVISION COST

The Project Inspector and/or the Project Manager will be on site for any work which occurs outside of the specified work hours, or on University of California at Berkeley holidays. The Contractor will be assessed the following rates:

University Employee	Hourly Cost
Project Manager	$149
Project Inspector	$146
On-Site Construction Coordinator	$146
Project Analyst	$125

1.48 PRECAUTIONS

Due to the nature of the research at BGC, extreme care must be taken to ensure that no dust, dirt or exhaust fumes are brought into the building(s). If dust, dirt, or exhaust fumes are brought into a building, all construction work will be stopped until the condition is abated and procedures have been established to rectify the problem, all at no additional cost to the Owner.

1.49 CULTURAL AND HISTORICAL RESOURCES

The project does not pass through any known archaeological sites. However, unrecorded archaeological sites could be discovered during construction. In the event that artifacts, human remains, or other cultural resources are discovered during construction, the Contractor shall protect the discovered items, cease work for a distance of 35 feet radius in the area, and notify the Owner's Representative in writing. The Owner may retain an archaeological consultant to evaluate findings in accordance with standard practice and applicable regulations. Artifact recovery, if deemed appropriate, will be conducted during the period when construction activities are on hold. Following completion of artifact recovery, a Change Order may be issued to adjust the contract time if required.

1.50 FINAL CLEANUP

Cleanup the entire construction area and adjacent areas affected by the performance of work under this Contract. Remove all temporary construction, tools, equipment, excess materials and debris.

1.51 PREPARATION FOR ACCEPTANCE (PRIOR TO FINAL INSPECTION)

1. Temporary facilities and utilities shall be properly disconnected, removed and disposed of off site.

2. All systems, equipment and devices shall be in full and proper adjustment and operation and properly labeled and identified.

3. All materials and finishes shall be neat, clean and unmarred.

4. All broken work, including glass, curbs, slabs, paving, landscape sprinklers, etc., shall be replaced or properly repaired.

5. Clean-up of the site shall be complete.

6. All guarantees, service manuals, record documents and other submittals as specified in the body of the Specifications, shall be assembled in an orderly manner and delivered to the Owner's Representative.

1.52 CONTRACTOR’S STORAGE AREA

The Contractor shall prepare a site utilization plan for review and approval by the Owner’s Representative.

1.53 FINAL INSPECTION

1. Upon receipt of written notice from the Contractor that the work is ready for final inspection and acceptance, the Owner's Representative and Contractor shall promptly make a joint inspection of the work and note deficiencies, if any. When noted deficiencies have been removed and the Owner's Representative finds the work to be complete in every respect of the Contract Documents, the Owner's Representative will advise the Owner to file a Notice of Completion.

2. The Notice of Completion shall be prepared and recorded in the County Recorder's Office. The date of final acceptance in the Notice of Completion will start the Guarantee period.

3. The Contractor shall not submit a Payment Application representing the work of the project to be one hundred percent (100%) complete prior to the recording of the Notice of Completion.

-- END OF SECTION 01010 --

SECTION 01011
PROJECT COORDINATION

PART 2 - GENERAL

1.01 Coordinate the Work and do not delegate responsibility for coordination to any subcontractor.

1.02 Anticipate the interrelationship of all subcontractors and their relationship with the Work.

1.03 Resolve differences or disputes between subcontractors concerning coordination, interference or extent of the work between sections.

1.04 Coordinate the work of subcontractors so that portions of the work are performed in a manner that minimizes interference with the progress of the work.

1.05 Do not obstruct spaces and installations that are required to be clear by Applicable Code Requirements.

1.06 Do not backfill any excavated areas or cover any piping, wiring, ducts or other installations until they have been inspected and approved and required certificates of inspection issued.

1.07 Remove and replace all work which does not comply with the Contract Documents. Repair or replace any other work or property damaged by these operations with no adjustment of Contract Sum.

1.08 Coordinate all portions of the Work requiring careful coordination in order to fit in space available. Before commencing such portions of the work, prepare supplementary Drawings for review by the Owner's Representative.

1.09 Coordinate the work with other contractors working in the vicinity of the project site.

-- END OF SECTION 01011 --

SECTION 01012
REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Perform all Work in compliance with requirements of:

1. State of California Code of Regulations (CCR):

   a. Title 8, Industrial Relations

   b. Title 19, Public Safety

   c. Title 21, Public Works, Chapter One, Subchapter One, Group 2, Office of Owner's Representative and Construction dealing with portions applicable to provisions for the Handicapped

   d. Title 22, Public Health

   e. Title 24, Building Standards, Parts 1-7 and Part 9

2. Occupational Safety and Health Act (OSHA)

3. National Electrical Code (NEC)

4. National Fire Protection Association Codes and Standards (NFPA):

   a. NFPA 24, Private Fire Service Mains and Their Appurtenances

5. Bay Area Air Quality Management District Regulations including but not limited to permit requirements for portable internal combustion equipment (engines and gas turbines greater than 50 hp).

6. All other applicable health and safety requirements, codes and regulations.

B. Unless otherwise specified, specific references to codes, regulations, standards, manufacturers' instructions, or requirements of regulatory agencies, when used to specify requirements for materials or design elements, shall mean the latest edition of each in effect at the date of submission of bids, or the date of the Change Order or Field Order, as applicable.

1.02 CONFLICTS

A. If a conflict exists between referenced regulatory requirements or between referenced regulatory requirements and the Contract Documents, Contractor shall notify Owner's Representative and request that the conflict be resolved. The fact that the Contract Documents may establish higher or more costly requirements than the minimum Code or other regulatory requirements referenced above shall not constitute a "conflict."

-- END OF SECTION 01012 --

SECTION 01013
QUALITY CONTROL

PART 1 - GENERAL

1.01 GENERAL

A. Definitions:

1. The term "Owner's Testing Laboratory" means a testing laboratory retained and paid for by Owner for the purpose of reviewing material and product reports and performing other services as determined by Owner.

2. The term "Contractor's Testing Laboratory" means a testing laboratory retained and paid for by Contractor to perform the testing services required by the Contract Documents. Contractor's Testing Laboratory shall be an organization other than Owner's Testing Laboratory and shall be acceptable to Owner's Representative. It may be a commercial testing organization, the testing laboratory of a trade association, the certified laboratory of a supplier, Contractor's own forces, or other organization. Contractor's Testing Laboratory shall have performed testing of the type specified for at least five (5) years.

B. Tests, inspections, and approvals of portions of the Work required by the Contract Documents or by Applicable Code Requirements shall be made at the times needed in order not to hinder the progress of the Work. Except as otherwise provided, Contractor shall make arrangements for such tests, inspections, and approvals with Contractor's Testing Laboratory. Contractor shall give Owner's Representative timely notice of when and where tests and inspections are to be made.

C. If such procedures for testing, inspection, or approval reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, Contractor shall bear all costs made necessary by such failure including those of repeated procedures and compensation for Owner's Representative's services and expenses.

D. If Owner's Representative is to observe tests, inspections, or make approvals required by the Contract Documents, Owner's Representative will do so, where practicable, at the normal place of testing.

E. Do not incorporate into the Work materials represented by samples under test without the written approval of Owner's Representative.

1.02 CONTRACTOR'S RESPONSIBILITIES REGARDING OWNER'S TESTING LABORATORY

A. Submit to Owner's Testing Laboratory the preliminary design mixes proposed to be used for concrete and other materials which require review by Owner's Testing Laboratory.

B. Submit copies of product test reports as specified.

C. Furnish incidental labor and facilities:

1. To provide Owner's Testing Laboratory access to Work to be tested.

2. To obtain and handle samples at the Project site or at the source of the product to be tested.

3. To facilitate inspections and tests.

4. For storage and curing of test samples.

D. Provide written notice to Owner's Representative and Owner's Testing Laboratory 72 hours in advance of operations to allow for assignment of personnel and scheduling of tests.

E. If Work is not performed when scheduled, Contractor shall reimburse Owner for Owner's Testing Laboratory personnel and travel expenses incurred.

1.03 TESTS AND INSPECTIONS

A. Certain portions of the Work will be tested or inspected at various stages. Nothing in any prior acceptance or satisfactory test result shall govern, if at any subsequent time the Work, or portion thereof, is found not to conform to the requirements of the Contract Documents.

B. Owner's Representative shall perform full-time on-site observations of construction as it progresses and upon completion, and shall make off-site reviews of fabricated materials and equipment when such off-site reviews are specified in the Contract Documents.

C. Inspector(s) shall be selected and employed by the Owner. The Inspector(s) shall observe testing and inspection done by the Contractor as required in the Contract Documents and coordinate and observe special testing and inspection when requested by the Owner's Representative or the Owner.

D. Contractor shall personally supervise all work and inspect all materials as they arrive for compliance with the Contract Documents, and shall reject defective work and material without waiting for such rejection from others in authority. Opportunity for observation and inspection by the Owner's Representative and Inspector(s) shall be afforded throughout the construction.

1.03 ADDITIONAL TESTING AND INSPECTION

A. If initial tests or inspections made by Owner's Representative reveal that any portion of the Work does not comply with Contract Documents, or if Owner's Representative determines that any portion of the Work requires additional testing or inspection, additional tests and inspections shall be made as directed.

B. If such additional tests or inspections establish that such portion of the Work complies with the Contract Documents, all costs of such additional tests or inspections shall be paid by Owner.

C. If such additional tests or inspections establish that such portion of the Work fails to comply with the Contract Documents, all costs of such additional tests and inspections, and all other costs resulting from such failure, including compensation for Owner's Representative and Owner's consultants, shall be deducted from the Contract Sum.

1.04 TEST REPORTS

A. Owner's Testing Laboratory and Contractor's Testing Laboratory shall distribute copies of all reports as follows:

1. Owner's Representative: One (1) copy.
2. Owner's Consultants: One (1) copy each.
3. Owner: Three (3) copies.
4. The number of copies for Contractor and Subcontractor being tested will be determined upon commencement of Contract.

1.05 UNCOVERING OF WORK

A. If a portion of the Work is covered contrary to Owner's Representative's request or direction, or contrary to the requirements of the Contract Documents, it must, if required in writing by Owner's Representative, be uncovered for Owner's Representative's observation and be replaced at Contractor's expense without adjustment of the Contract Time or the Contract Sum.

B. If a portion of the Work has been covered, which is not required by the Contract Documents to be observed or inspected prior to its' being covered and which Owner's Representative has not specifically requested to observe prior to its being covered, Owner's Representative may request to see such Work and it shall be uncovered and replaced by Contractor. If such Work is in accordance with the Contract Documents, the costs of uncovering and replacing the Work shall be added to the Contract Sum by Change Order; and if the uncovering and replacing of the Work extends the Contract Time, an appropriate adjustment of the Contract Time shall be made by Change Order. If such Work is not in accordance with the Contract Documents, Contractor shall pay such costs and shall not be entitled to an adjustment of the Contract Time or the Contract Sum.

-- END OF SECTION 01013 --

SECTION 01014
EXISTING CONDITIONS

PART 1 - GENERAL

1.01 SUBMITTALS

A. When conditions encountered differ from that shown, submit proposed remedial methods for approval.

B. Cross-reference to Contract Documents includes shop drawings, samples and product data as appropriate.

PART 2 - PRODUCTS

2.01 MATERIALS

A Materials, Manufacturers and Fabrication: Comply with the requirements established by the Contract Documents.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions and surfaces that will become substrates for, or contiguous surfaces with, the work under this contract. Should deviations from tolerances established by the Contract Documents interfere with lines, levels or the tolerances established for the work under this contract, correct prior to commencement of adjacent new work.

B. Submit a written list of conflicts and remedial requirements within 10 days of the Notice-to-Proceed. Any conflicts not identified at that time will be remedied at the Contractor's expense.

C. If photographic or video media is utilized to record condition prior to the start of construction, submit two (2) sets of media to the Owner for its records.

3.02 WORKMANSHIP

A. Work shall be done in accordance with tolerances established by the Contract Documents.

-- END OF SECTION 01014 --

SECTION 01016
HAZARDOUS MATERIALS

PART 1 - GENERAL

This section shall not excuse the contractor from requirements specified in Section 01015 – Asbestos Removal.

This section provides Contractor procedural requirements and a summary of known or suspected hazardous materials at the project site.

1.01 HAZARDOUS MATERIALS PROCEDURES

A. Contractor shall not cause hazardous materials to become airborne, spill to the ground or water, dispose of into drains, or cause a hazardous material to pose an exposure risk to people or the environment.

B. If any hazardous material that is not part of the scope of work is discovered in a work area, and Contractor cannot safely avoid disturbing the hazardous material, Contractor shall immediately stop work in the affected area and report the condition in writing to the Owner's Representative. Contractor shall immediately transfer his work effort to other areas of the site that are not impacted by hazardous materials. Hazardous materials removal shall be the responsibility of the Owner, unless otherwise specified in the construction manual.

C. Contractor is responsible for the health and safety their employees and subcontractors, through hazard communication, training, and providing appropriate personal protective equipment, or engineered control of hazards.

D. Contractor shall obey all federal, state and local environmental, health and safety laws and regulations, including OSHA, Cal-OSHA, EPA, Cal/EPA, local water district requirements, and local municipal ordinances.

E. UC Berkeley will be responsible for disposal of hazardous wastes (as defined in the California Code of Regulations Title 22-66261) that are generated from the project. Contractor shall be responsible for hazardous waste generated from accidents or neglect by Contractor, Contractor employees, and Contractor subcontractors.

F. If any other hazardous material is suspected (or identified) that is not part of the excavation under this scope of work, the Contractor shall immediately transfer his work effort to other areas of the site that are not impacted by such hazardous material.

G. If any other hazardous material is present that is not part of the excavation, the Contractor will not be permitted to work in the affected area until such materials are properly removed by registered and the area is determined to be safe by the Campus Office of Environment, Health and Safety (EH&S).

H. Removal of any other hazardous material not part of the excavation under this scope of work will be the responsibility of the Owner.

I. A Change Order will be issued by the Owner's Representative to account for the project delay, and to establish a new construction completion date, if required.

1.02 HAZARDOUS MATERIALS

A. Asbestos Containing Materials: Not Applicable.

B. Chemicals: Not Applicable. See Section 01354, “Health, Safety, and Emergency Response Procedures Contaminated Sites” for chemical contamination associated with the soil removal.

-- END OF SECTION 01016 --

SECTION 01017
INSPECTION OF WORK

PART 1 - GENERAL

1.01 ACCESS TO WORK

A. In addition to the requirements of the General Conditions, Owner, Owner's Representative and their representatives shall at all times have access to the Work wherever it is in preparation or progress and Contractor shall provide safe and proper facilities for such access and for inspection. The inspection and written acceptance of material and workmanship, unless otherwise stated in these Specifications, shall be final except as provided in the General Conditions.

1.02 TESTING AND APPROVAL

A. In addition to the requirements of the General Conditions, if any law, ordinance or public authority or the Specifications or Owner's Representative's instructions require any work to be specially tested or approved (including use of ionizing radiation for radiography), Contractor shall give Owner's Project Inspector timely notice of its readiness for inspection, and if the inspection is by another authority than Owner's Project Inspector, of the date fixed for such inspection.

B. Re-examination of questioned work may be ordered by Owner's Representative or Owner's Project Inspector.

1.03 OWNER'S INSPECTORS

A. Owner shall supply personnel who shall observe construction in progress. Project Inspectors shall have the following responsibilities and limitations on authority:

1. Observe installations and work in progress as a basis for determining conformance of the work, materials and equipment with the Construction Documents. Project Inspector will report any discrepancies observed to Owner's Representative and Contractor. Only Owner's Representative has the authority to make approvals or rejections.

2. Only Owner's Representative shall interpret the requirements of the Construction Documents. If any item is ambiguous, Owner's Representative shall make a written interpretation. If Contractor requests changes or modifications to the Construction Documents, Owner's Representative shall make a written determination on the requested changes or modifications.

3. Prepare a daily inspection report during site activities.

4. Review the monthly progress payment request before Contractor submits it to Owner's Representative.

5. Assist Owner's Representative in reviewing the test and inspection results of testing laboratories.

6. The Project Inspector is not authorized to permit deviations from the requirements of the Contract Documents unless such deviation has been approved by Owner's Representative in writing.

7. The Project Inspector is not authorized to advise on or issue directions to Contractor about any aspect of construction means, methods, techniques, sequences or procedures, or relating to safety programs in connection with the Project.

B. The failure of Owner, Owner's Representative and its representatives and consultants, or Owner's Project Inspector to observe or inspect the Work, or to detect deficiencies in the Work, or to inform Contractor of any deficiencies which may be discovered, shall not relieve Contractor, its subcontractors regardless of tier, or suppliers from their responsibility for construction means, methods, techniques, sequences and procedures, construction safety, nor from their responsibilities to carry out the work in accordance with the Contract Documents and to detect and correct defective work. The term "defective work" means work that is unsatisfactory, faulty, omitted, incomplete, deficient, or does not conform to the requirements of the Contract Documents, directives of Owner's Representative, or the requirements of any inspection, reference standard, test, or approval specified in the Contract Documents, or has been damaged prior to final completion, unless responsibility for the protection of such work has been assumed by Owner through beneficial occupancy (or substantial completion, where applicable) in accordance with the General Conditions.

1.04 INSPECTION REQUESTS

A. Contractor shall request inspection of completed portions of the Work through Owner's Project Inspector, at least 72 hours in advance of the inspection to be performed.

B. The Owner's Project Inspector or Owner's Project Manager will be on site for all work that takes place other than during normal work hours or that takes place on weekends or on University holidays. The Contractor is responsible for the cost of inspections during non-normal work hours performed by the Owner's Project Inspector or Owner's Project Manager.

C. Repeat inspection or inspections requested and subsequently canceled, may be subject to back charges in accordance with Section 01010 – Summary of Work.

-- END OF SECTION 01017 --

SECTION 01018
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY

A. Contractor shall be responsible for all cutting, fitting and patching required to complete the work and to:

B. Make its several parts fit together properly.

C. Uncover portions of the work to provide for installation of ill-timed work.

D. Remove and replace work not conforming to requirements of Contract Documents.

1.02 SUBMITTALS

A. Submit a written request to Owner's Representative well in advance of executing any cutting or alteration which affects:

1. The work of the Owner or any separate contractor.
2. The structural value or integrity of any element of the existing building.
3. The integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
4. The efficiency, operational life, maintenance or safety of operational elements.
5. The visual qualities of sight-exposed elements.

B. The request shall include:

1. Identification of the project.
2. Description of the affected work.
3. The necessity for cutting alteration.
4. The effect of the work on the Owner or any separate Contractor and on the structural or weatherproof integrity of the existing building.
5. Description of the proposed work:
    a. The scope of cutting, patching or alteration.
    b. The trades who will execute the work.
    c. Products proposed to be used.
    d. The extent of refinishing to be done.

6. Alternatives to cutting and patching.

7. Cost proposal, when applicable.

8. Written permission of any separate contractor whose work will be affected.

C. Should conditions of the work or the schedule indicate a change of products, submit a request for substitution.

D. Submit a written notice to Owner's Representative designating the date and the time the work will be uncovered.

PART 2 - PRODUCTS

2.01 MATERIALS

Comply with Contract Documents for each specific product involved.

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspect existing conditions of the project, including elements subject to damage or to movement during cutting and patching.

B. After uncovering work, inspect the conditions affecting the installation of products or performance of the work.

C. Report unsatisfactory or questionable conditions to the Owner's Representative in writing; do not proceed with the work until the Owner's Representative has provided further instructions.

3.02 PREPARATION

A. Provide adequate temporary support as necessary to assure the structural value or integrity of the affected portion of the work.

B. Provide devices and methods to protect other portions of the project from damage.

C. Provide protection from the elements for that portion of the project which may be exposed by cutting and patching work.

3.03 PERFORMANCE

A. Execute cutting and demolition by methods which will prevent damage to other work and will provide proper surfaces to meet project requirements.

B. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances and finishes.

C. Restore work which has been cut or removed; install new products to provide completed work in accordance with requirements of Contract Documents.

D. Fit work airtight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.

E. Refinish entire surfaces as necessary to provide an even finish to match adjacent finishes.

1. For continuous surfaces, refinish to nearest intersection.

2. For an assembly, refinish the entire unit.

-- END OF SECTION 01018 --

SECTION 01019
SCHEDULING REQUIREMENTS

PART 1 - GENERAL

1.01 CONTRACT SCHEDULE

A. Submission:

1. Within ten (10) days after receipt of Notice of Apparent Lowest Responsible Bidder, submit detailed Preliminary Cost Breakdown with other required documents to Owner, and to Owner's Representative for approval.

2. Submit the Contract Schedule, in a form acceptable to Owner's Representative, within ten days of the date of commencement as specified in the Notice to Proceed.

3. The Owner's Representative will determine acceptability of the Contract Schedule within seven (7) days after its receipt.

4. No Application for Payment will be processed nor shall any progress payment become due until the Contract Schedule is accepted by the Owner's Representative.

5. Submit Material and Safety Data Sheets (MSDS) within ten days of the date of commencement as specified in the Notice to Proceed. MSDS must be kept on the job site throughout the course of work.

B. Form:

1. The Contract Schedule shall be a bar chart showing continuous flow from left to right, specific calendar dates shall be clearly and legibly shown for the start and finish of each work activity.

2. The Contract Schedule shall be suitable for monitoring progress of the Work in sufficient detail to demonstrate adequate planning for the Work and represent a practical plan to complete the work within the Contract time and within the dates shown on the Notice to Proceed.

3. Identify the following milestone events on the Contract Schedule:

   a. Notice to Proceed

   b. Submittals with day review time factored in

   c. Ordering of materials after receipt of approved shop drawings

   d. Access interruption submittal 10 days prior to commencement of each phase of work

   e. Survey of excavation area

   f. Mobilization

   g. Start and completion of excavation

   h. Collection of confirmation soil confirmation sampling

i. Start and completion of off-site transport and disposal of excavated soil.

j. Start and completion of backfill and site restoration

k. Demobilization

4. Determine in advance and allow for special events, final examinations or other activities where Owner will not permit noisy, dusty and disruptive construction work.

5. Identify all Owner holidays and non-working days on the Contract Schedule.

C. Activities:

1. Submit list of major Contractor-furnished equipment, materials and building elements, and scheduled activities requiring Owner's Representative's prior approval. Dates shall be shown for the procurement, fabrication, delivery and installation of major equipment, materials and building elements, and for scheduled activities designated by Owner's Representative. A minimum of 21 days shall be allotted for the Owner's Representative to review each submittal.

2. Submit system test dates when necessary.

3. Submit Contractor's requests for designated working spaces, storage areas, access and other facilities to be provided by Owner.

4. Submit Contractor's request for orders and decisions that would be required from Owner's Representative on other designated items.

5. The presentation of each Work activity on the Contract Schedule shall include a brief description of the work activity, the duration of the work activity in days, and a responsibility code identifying the organization or trades performing the work activity.

D. Updating:

1. Review the Contract Schedule with Owner's Representative once each week to incorporate in the Contract Schedule all changes in the progress, sequences and scope of work activities.

2. Prepare and submit to Owner's Representative an updated Contract Schedule once each week, or as mutually agreed.

a. The updated Contract Schedule shall accurately represent the as-built condition of all completed and in-progress work activities as of the date of the updated Contract Schedule.

b. The updated Contract Schedule shall incorporate all changes mutually agreed upon by Contractor and Owner during preceding periodic reviews, and all changes resulting from Change Orders and Field Orders.

c. Contractor shall perform the work in accordance with the updated Contract Schedule. Contractor may change the Contract Schedule to modify the order or method of accomplishing the work only with prior agreement by Owner's Representative.

3. Contractor shall submit the updated Contract Schedule, in the form acceptable to Owner's Representative, at least seven days prior to submitting the Application for Payment.

4. The Owner's Representative will determine acceptability of the updated Contract Schedule within seven days after its receipt.

5. No Application for Payment will be processed nor shall any progress payments become due until updated Contract Schedules are accepted by the Owner's Representative.

6. The accepted, updated Contract Schedule shall be the Contract Schedule of record for the period it is current and shall be the basis for payment during that period.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

-- END OF SECTION 01019 --

SECTION 01020
PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 SUBSTITUTION OF MATERIALS AND EQUIPMENT

A. Catalog numbers and specific brands of trade names followed by the designation "or equal" are used in conjunction with the material and equipment required by the Specification to establish the standards of quality, utility and appearance required. Substitutions which are equal in quality, utility and appearance to those specified may be accepted subject to the following provisions:

1. All substitutions must be approved by the Owner's Representative in writing.

2. Contractor shall submit to the Owner's Representative, within 14 calendar days after the date of commencement specified in the Notice to Proceed, a typewritten list containing a description of each proposed substitute item or material, along with the documents required in paragraph 1.1C.

3. The Owner's Representative will accept, in writing, such proposed substitutions as are, in the Owner's Representative's opinion, equal in quality, utility and appearance to the items or materials specified.

4. Such approval shall not relieve the Contractor from complying with the requirements of the drawings and specifications.

5. Contractor shall be responsible at the Contractor's own expense for any changes resulting from the Contractor's proposed substitution which affect other parts of the Contractor's own work or the work of others.

6. The decision of the Owner's Representative shall be final.

B. If a request for substitution occurs after the 14 calendar day period, the substitution may be reviewed at the discretion of the Owner's Representative; and the costs of such review, as approved by Owner, shall be borne by Contractor and will be deducted from the Contract Sum.

C. Requests for substitutions will only be considered if Contractor submits the following supporting data:

1. Complete technical data including drawings, performance specifications, samples and test reports of the article proposed for substitution; and any additional information required by the Owner's Representative.

2. Data described in Subparagraph C-1 for the specified item for which substitution is proposed.

3. List similar projects using product, dates of installation, and names of Owner and Owner’s Representative.

4. Statement by Contractor that the proposed substitution is in full compliance with the requirements of the Contract Documents and Applicable Code Requirements.

5. Itemized comparison of proposed substitution with specified product, listing variations, and reference of Specifications section name and number, article and paragraph numbers.

6. List availability of maintenance services and replacement materials.

7. List of Subcontractors, if any, that may be affected by the substitution.

8. If the proposed substitution requires that portions of the work be redesigned or removed in order to accommodate the substituted item, submit design and engineering calculations prepared by a properly licensed design professional.

D. The Owner's Representative may reject any substitutions not proposed in the manner and within the time prescribed above.

E. For products specified by naming only one product and manufacturer, without the qualifying phrase “or equal” there is no option, and no substitution will be allowed. Such is the case with products, materials, equipment or systems which are specified for the purpose of matching a specific function or economy of maintenance of other products, materials, equipment or systems already in use in existing portions of University’s installations. Where matching with an existing item is required, the final decision whether a product proposed matches the item satisfactorily is University Representative’s judgment.

F. The 14-day submittal period does not excuse the Contractor from completing the project within the performance time stipulated in the agreement or excuse the Contractor from the payment of liquidated damages if final completion is delayed.

G. Wherever more than one manufacturer’s product is specified, any of the specified products are acceptable and a substitution request is not required; however, the first-named product is the basis for the design used in the work and the use of alternative-named manufacturer’s products or substitutes may require dimensional modification in the project design and construction and resulting adjustments in location of related work. If such alternatives are proposed by Contractor in accordance with submittal requirements and are favorably reviewed by the Owner’s Representative, Contractor shall assume costs required to make necessary dimensional revisions and modifications. Such approval will not be unreasonably withheld.

H. If the Owner's Representative, in review of the list of materials and equipment, requires revisions or corrections to be made or shop drawings and/or supplemental data to be submitted, Contractor shall promptly do so. If any proposed substitute is judged by the Owner's Representative to be unacceptable, the specified item shall be provided; further submissions will not be allowed, unless directed by the Owner's Representative.

I. Samples may be required. Tests required by the Owner's Representative for the determination of the quality and utility shall be made by Contractor’s Testing Laboratory, and at the expense of Contractor, with acceptance of the test procedure first given by the Owner's Representative.

J. In review of the data submitted in support of substitutes, the Owner's Representative will use for purposes of comparison all the characteristics of the specified item as they appear in the manufacturer's published data even though all the characteristics of the specified item may not have been particularly mentioned in the specification. If more than two submissions of data are required, the cost of reviewing these additional submissions shall be charged directly against Contractor; and the Owner will withhold the funds necessary to cover these costs.

PART 2 – PRODUCTS – NOT USED

PART 3 – EXECUTION – NOT USED

-- END OF SECTION 01020 --

SECTION 01021
SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Shop Drawings, Product Data, Samples and other submittals, other than in connection with proposed substitutions, shall be submitted to Owner's Representative only when specifically required; and Owner's Representative will not review any other such submittals. Product Data and Samples for proposed substitutions shall be submitted to Owner's Representative in accordance with Section 01020 – Product Options and Substitutions. Contractor shall be responsible for obtaining such copies of Shop Drawings, Product Data, and Samples as it may require for its own use.

1.02 RELATED REQUIREMENTS

A. Definitions:

1. The terms "Shop Drawings" and "Product Data" as used herein also include, but are not limited to, fabrication, erection, layout and setting drawings, manufacturers' standard drawings, descriptive literature, catalogues, brochures, performance and test data, wiring and control diagrams, all other drawings and descriptive data pertaining to materials, equipment, piping, duct and conduit systems, and methods of construction as may be required to show that the materials, equipment, or systems and the positions thereof conform to the Contract Documents.

2. As used herein, the term "manufactured" applies to standard units usually mass-produced. The term "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements. Shop Drawings shall establish the actual detail of all manufactured or fabricated items, indicate correct relation to adjoining Work, and amplify design details of mechanical and electrical equipment in accurate relation to physical spaces in the structure.

B. Manufacturers' Instructions: Where any item of Work is required by the Contract Documents to be furnished, installed, or performed in accordance with a specified product manufacturer's instructions, Contractor shall procure and distribute the necessary copies of such instructions to Owner's Representative and all other concerned parties; and Contractor shall furnish, install, or perform the Work in strict accordance therewith.

C. Submittal Schedule:

1. Contractor shall provide a Submittal Schedule to the Owner's Representative for approval no later than 10 days after the date of commencement specified in the Notice to Proceed.

2. The schedule for submission of Shop Drawings, Product Data, and Samples by Contractor (the "Submittal Schedule"), and their processing and return by Owner's Representative, shall be agreed upon by both parties in order that the items covered by these submittals will be available when needed by the construction process and so that each party can plan its workload in an orderly manner.

3. Contractor shall prepare the Submittal Schedule in the format acceptable to the Owner's Representative and coordinate it with the Contract Schedule. No submittals will be processed before the Submittal Schedule has been submitted to and accepted by Owner's Representative, except in such cases where the processing of submittals is required before the acceptance of the Submittal Schedule.

4. In preparing the Submittal Schedule, Contractor shall first determine from the Contract Schedule the date the particular item is needed for the Work. Working backwards, Contractor shall add the required number of days for submittal review, time for fabrication, shipment, and similar items to determine the date of the first submittal.

5. The Submittal Schedule shall be adjusted to meet the needs of the construction process and Contract Schedule. Submit two (2) copies (minimum) of the Submittal Schedule after it is completed and each time it is updated by Contractor.

1.03 SHOP DRAWINGS

A. Present information required on Shop Drawings in a clear and thorough manner. Identify details by reference to drawing and detail, schedule, or room numbers shown and specified.

1.04 PRODUCT DATA

A. Preparation:

1. Clearly mark each copy to identify pertinent products or models.
2. Show performance characteristics and capacities.
3. Show dimensions and clearances required.
4. Show wiring or piping diagrams and controls.

B. Manufacturers' standard schematic drawings and diagrams:

1. Modify the Drawings and other diagrams to delete information which is not applicable to the Work.
2. Supplement standard information to provide information specifically applicable to the Work.

1.05 SAMPLES – NOT USED

1.06 CONTRACTOR'S REVIEW OF SUBMITTALS

A. Review, mark up as appropriate, and stamp Shop Drawings, Product Data, and Samples prior to submission. Submittals shall clearly show that they have been reviewed by Contractor for conformance with the requirements of the Contract Documents and for coordination of the Work.

B. Determine and Verify:

1. Field measurements.
2. Field construction criteria.

3. Catalog numbers and similar data.
4. Conformance with Contract Documents.

C. Coordinate each submittal with requirements of the Work and of the Contract Documents.

D. Notify Owner's Representative in writing, at time of submission, of any changes in the submittals from requirements of the Contract Documents.

E. Begin no fabrication or Work which requires submittals until the return of Owner's Representative's final reviewed submittals.

1.07 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with the Submittal Schedule and in such sequence as to cause no delay in the Work or in the work of any separate contractor.

B. Number of Submittals Required:

1. Shop Drawings: Submit six (6) copies. After checking, Owner's Representative will make prints for itself, consultants, and Owner and then return one copy to Contractor. Contractor shall make prints as it requires for its use and for Subcontractors' use.
2. Product Data and Non-Reproducible Submittals: Same as for Shop Drawings.
3. Samples: Not Used.

C. Submittals shall contain:

1. Date of submission and dates of any previous submissions.
2. Project name and number.
3. Contract identification.
4. The names of:
   a. Contractor.
   b. Subcontractor.
   c. Supplier.
   d. Manufacturer.
5. Identification of the product, with the Specification Section number.
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the Work or materials.
8. Reference standards, such as ASTM or Federal Specification numbers.
9. Identification of changes from requirements of the Contract Documents.

10. Identification of revisions on resubmittals.

11. Sequential numerical identification of the submittal. Each re-submittal shall bear the original submittal number plus a hyphenated suffix sequential number. For example, the first submittal would be numbered 001-0. The first resubmittal would be numbered 001-1; the second resubmittal would be numbered 001-2. If additional resubmittals are required, review time will be back-charged to the Contractor.

12. An 8-inch x 3-inch blank space for review stamps.

13. Contractor's stamp, initialed or signed, certifying to the review of submittal; verification of materials and field measurements and conditions; and compliance of the information within the submittal with requirements of the Work and of the Contract Documents.

D. Resubmission Requirements:

1. Shop Drawings and Product Data:

a. Revise Shop Drawings or Product Data, and resubmit as specified for the initial submittal.

b. Identify any changes which have been made other than those requested.

c. Note any departures from the Contract Documents or changes in previously reviewed submittals which were not commented upon by Owner's Representative.

2. Samples: Not Used.

E. Distribution:

1. Owner's Representative will distribute approved Shop Drawings, Product Data and Samples, (all of which carry Owner's Representative's review stamp) to the following:

a. Owner: Two (2) copies minimum

b. Contractor: Two (2) copies minimum

c. Owner's Representative: Two (2) copies minimum

F. Owner's Representative's Review: Owner's Representative will review Contractor's submittals, such as Shop Drawings, Product Data, and Samples, for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of Contractor as required by the Contract Documents. Due to an additional review by DTSC, allow a minimum of 30-day turnaround time for the Work Plan submittal.

-- END OF SECTION 01021 --

SECTION 01022
PROJECT MEETINGS

PART 1 – GENERAL

1.01 PROCEDURE MEETING

A. After execution of the construction contract, and typically prior to commencement of the Work, a procedure meeting (kick-off meeting) will be conducted by Owner to discuss procedures which are to be followed during performance of the Work. The Contractor and Owner's Representative shall be prepared to review job schedules, discuss various aspects of the work, and administrative procedures for smooth job progress.

B. Location: As designated by Owner.

C. Attending shall be:

a. Owner's Representative.

b. Owner.

c. Owner's Project Inspector

d. Owner's Consultants and Owner's Representative's Consultants, as appropriate.

e. Contractor.

f. Contractor's Superintendent.

g. Subcontractors, as appropriate.

h. Others, as appropriate.

1.02 BILLING MEETING

A. A billing meeting shall be conducted by Owner's Representative each month prior to submittal of the Application for Payment.

B. Location: As designated by Owner's Representative.

C. Attending shall be:

1. Owner's Representative.
2. Owner.
3. Owner's Project Inspector
4. Owner's Consultants and Owner's Representative's Consultants, as appropriate.
5. Contractor.
6. Contractor's Superintendent.
7. Subcontractors, as appropriate.
8. Others, as appropriate.

1.03 PROGRESS MEETING

A. During the course of construction, progress meetings will be held weekly to review progress of the work and resolve construction problems. The minutes of these meetings will be prepared by the Owner's Representative and issued as expeditiously as possible. The progress meeting minutes will be transmitted to DTSC as well as other regulatory agencies by UC Berkeley within 7 calendar days of the meeting.

B. Location: As designated by Owner's Representative.

C. Attending shall be:

1. Owner's Representative.
2. Owner.
3. Owner's Project Inspector
4. Owner's Consultants and Owner's Representative's Consultants, as appropriate.
5. Contractor.
6. Contractor's Superintendent.
7. Subcontractors, as appropriate.
8. Others, as appropriate.

1.04 GUARANTEES, BONDS, AND SERVICE AND MAINTENANCE CONTRACTS REVIEW MEETING

A. Eleven months following the date of Substantial Completion, if applicable, or Final Completion, a meeting shall be conducted by Owner for the purpose of reviewing the guarantees, bonds, and service and maintenance contracts for materials and equipment.

B. Attending shall be:

1. Owner.
2. Owner's Consultants, as appropriate.
3. Contractor.
4. Subcontractors, as appropriate.
5. Others, as appropriate.

-- END OF SECTION 01022 --

SECTION 01023
CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.01 SUPPLEMENTS

A. When construction changes are proposed, they will be originated with a Supplement issued by the Owner's Representative to the Contractor.

B. Supplements will be numerically sequential and may include multiple items.

C. Supplements may be issued due to changes requested in the project by the Owner, the Owner's Representative or the Contractor.

D. Supplements are not Change Orders, however, some Supplements may become Change Orders.

E. The Contractor shall prepare a Cost Proposal (backup) in response to the Supplements as rapidly and accurately as possible.

1.02 CONTRACTOR'S COST PROPOSAL (BACKUP)

A. Following receipt of a Supplement, the Contractor shall prepare an estimate of cost and time for execution of the proposed change which, if accepted, will become the backup for a Change Order (i.e., Cost Proposal).

B. The Cost Proposal shall identify each item of work affected by the proposed change, value of the change, and a summary of overhead, profit, total cost and any time extensions required.

C. Cost Proposals shall show, as applicable, General Contractor's, Subcontractor's, and Sub-Subcontractor's work. Cost Proposals shall also show detailed breakdown of material, labor, etc., plus applicable percentages for overhead and profit as provided in the General Conditions.

1.03 FIELD CLARIFICATIONS AND FIELD ORDERS

A. From time to time it may become necessary to issue field clarifications to the Contractor for minor changes not affecting Contract Sum or Contract Time.

B. Where the change affects the Contract Sum or the Contract Time, and to minimize delays, a Field Order may be issued.

C. A Field Order will be superseded by a Supplement and, subsequently, an executed Change Order.

1.04 CHANGE ORDERS

A. Change Orders will be numerically sequential and may include multiple change items.

B. Change Orders will reference (at a minimum):

1. Owner's Representative's Supplement Numbers and Dates,

2. Contractor's Cost Proposal Numbers and Dates,

3. Other applicable written documentation (i.e., meeting notes, Requests For Information, etc.).

C. All Change Orders will be appended with Contractor's Backup (Supplements, Cost Proposals, or any other written documents referenced in the Change Order).

D. Change Orders will adjust Contract Sum and Contract Time as applicable.

E. Following receipt and acceptance of Contractor's Backup, Change Orders will be prepared and issued by the Owner's Representative. The Owner's Representative will transmit the Change Order (with backup) to the Contractor for signature. The Contractor will then return the Change Order (with backup) to the Owner's Representative for final execution.

F. The Owner's Representative, the Contractor, and the Owner shall sign each original part of the Change Order in ink.

G. Upon execution by the Owner's Representative, Contractor and Owner, the Change Order will become part of the Contract Documents.

H. The Contractor will not bill for a Change Order on the Application for Payment prior to its execution by the Owner. The Owner's Representative will not approve the portion of any Application for Payment which bills for a Change Order not yet executed by the Owner.

1.05 PROJECT SCHEDULE

A. Contractor shall adjust their construction schedule to reflect fully-executed Change Orders (if any), in accordance with the General Conditions.

-- END OF SECTION 01023 --

SECTION 01024
CLEAN UP AND DISPOSAL

PART 1 - GENERAL

1.01 SUMMARY

A. Clean up and disposal.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 CONTINUOUS CLEAN UP

A. Under no circumstances shall rubbish, debris, waste, dust, dirt, or surplus materials be allowed to accumulate in the building, or on the Project site, and all such shall be removed continually as the Work progresses and by the end of each day's Work.

B. Materials: In occupied building areas, only sufficient materials and flammable or toxic substances necessary for the Work being performed that day or shift shall be brought into the building and work areas. In no case shall flammable or toxic substances be stored in the building, and these substances shall be immediately removed from the building when not needed and not later than the end of the day's Work.

C. Splattering or spilling of material shall be promptly cleaned up at time of occurrence.

D. Contractor shall provide street sweeping whenever silt from construction site is carried over to adjacent public thoroughfares.

E. Failure to maintain a clean and orderly project site may necessitate action by the Owner. In the event that the Contractor fails to clean up and maintain the project in a clean and orderly manner, the Owner may clean the job site and back-charge the Contractor for costs in accordance with Section 01010 – Scope of Work.

3.02 FINAL CLEAN UP

A. Owner's Representative's Inspection: Give Owner's Representative at least 24 hours advance notice of readiness for inspection. Any deficient cleaning operations, as determined by Owner's Representative, shall be immediately corrected as approved at Contractor's expense.

B. Interior surfaces and areas where Work is performed shall be left in vacuum clean condition with all dust, dirt, stains, hand marks, paint spots, plaster droppings, and other blemishes and defects completely removed. To the extent of Contractor's operations, use or materials, the following requirements apply to all areas where Work is performed:

C. Walls: Bare and painted surfaces shall be cleaned and free of dust, lint, streaks, or stains.

D. Hardware and metal surfaces shall be cleaned and polished using non-corrosive and non-abrasive materials.

E. Glass: New glass and soiled existing glass shall be washed and polished both sides and left free of dirt and spots. Labels shall be removed.

F. Ceilings shall be clean and free of stains, handmarks, and defacing.

G. Fixtures and Equipment: New mechanical and electrical fixtures and like items shall be cleaned and polished. Lighting fixtures shall be free of dust, dirt, stains, or waste material. Equipment and machinery shall be cleaned, serviced, and ready for use. Existing items shall be cleaned as required including ventilating supply and return equipment in walls and ceilings.

H. Surfaces not mentioned shall be cleaned according to the intent of this Section and as required for Owner's Representative's approval.

3.03 DISPOSAL

A. Under no circumstances shall debris, rubbish, or waste material be disposed of on Owner's property by burying or otherwise, and all shall be removed from Owner's property to a legal disposal area. Contractor shall bear all dumping charges.

3.04 CORRECTIVE WORK

A. Where existing Work has been dirtied, stained, defaced, or otherwise made defective and cleaning operations are not satisfactory, as determined by Owner's Representative, Contractor shall remove the Defective Work and install new Work as requested and approved, at no extra cost to Owner.

3.05 CLEAN UP SPECIFIED IN OTHER SECTIONS

A. Any clean up specified in other Sections of these Specifications shall be in addition to, and not in lieu of, these requirements.

-- END OF SECTION 01024 --

SECTION 01027
TEMPORARY UTILITIES

PART 1 - GENERAL

1.01 SUMMARY

A. Provide and maintain temporary utilities for construction operations and related necessary temporary structures. Remove them when they are no longer needed.

B. Owner does not guarantee amounts of water available from existing Owner's sources, nor will Owner be responsible for interruptions in service.

1.02 REQUIREMENTS OF REGULATORY AGENCIES

A. Install and use temporary utilities in accordance with Section 01012 – Regulatory Requirements.

PART 2 - PRODUCTS

2.01 GENERAL

A. Materials may be new or used, but shall be adequate for the required purposes. Their use and methods of installation shall not create unsafe conditions or violate requirements of applicable codes and standards.

2.02 TOILET FACILITIES

A. Install temporary toilets and maintain toilets in a clean and sanitary condition.

1. All portable toilets shall be located within the fenced Contractor's Storage Area and not sited with 50 feet of any storm drain inlet or other surface water body.

2. Provide one (1) toilet per each fifteen (15) persons on the Project site at any one time, minimum.

2.03 TEMPORARY TELEPHONE

A. Telephone service will not be provided by Owner, except in case of emergency involving life and safety. Contractor shall make arrangements for temporary telephone service.

2.04 TEMPORARY ELECTRIC SERVICE

A. The Contractor shall provide all temporary electric service required for the project. Power will be provided by the Owner at no cost to the Contractor.

B. Requirements of Regulatory Agencies: Comply with applicable State and Federal codes, regulations and requirements.

2.05 TEMPORARY WATER

A. Water service shall be provided via a contractor-furnished metered valve on a nearby fire hydrant. Contractor shall furnish, install and maintain necessary temporary supply connections, piping, fittings, etc., as necessary for the Work. Before final acceptance, all temporary connections and piping installed by Contractor shall be removed in a manner approved by Owner's Representative. Water will be provided by Owner at no cost to Contractor.

1. Install a double-check valve assembly, approved by Owner's Representative, at the point of connection to Owner's water system.

PART 3 - EXECUTION

3.01 GENERAL

A. Maintain and operate systems to provide continuous service.

B. Modify and extend systems as required.

-- END OF SECTION 01027 --

2.05.A Add the following:
Only one 2-1/2" fire hydrant outlet is to be used for each fire hydrant. The valve, double-check valve assembly, and meter shall be removed and the hydrant cap replaced at the end of each workday.

SECTION 01029
CONTRACTOR'S USE OF THE PROJECT SITE

PART 1 - GENERAL

1.01 USE OF PUBLIC THOROUGHFARES AND UNIVERSITY ROADS

A. Contractor shall make its own investigation of the condition of available public thoroughfares and BGC roads, and of the clearances, restrictions, bridge load limits, and other limitations affecting transportation and ingress and egress at the Project site.

B. Where materials are transported in the prosecution of the Work, do not load vehicles beyond the capacity recommended by manufacturer of the vehicles or prescribed by any applicable state or local law or regulation.

C. Use only established roads at the BGC; provided, however, that such temporary haul roads as may be required in the work shall be constructed and maintained by Contractor, subject to the approval of Owner's Representative.

D. Provide protection against damage whenever it is necessary to cross existing sidewalks, curbs, and gutters in entering upon the BGC roads. Repair and make good at the expense of Contractor all damages thereto, including damage to existing utilities and paving, arising from the operations under the Contract.

E. Truck staging is not allowed along adjacent City of Richmond streets surrounding the BGC.

1.02 WATCHMAN'S SERVICES

A. During all hours that Work is not being prosecuted, furnish such watchman's services as Contractor may consider necessary to safeguard materials and equipment in storage on the Project site, including Work in place or in process of fabrication, against theft, acts of malicious mischief, vandalism, and other losses or damages.

B. Owner will not be liable for any loss or damage.

1.03 RUBBER-TIRED EQUIPMENT

A. Where carts, hand trucks, wheelbarrows, and similar wheeled conveyances are used on or in any portions of any structure, equip with pneumatic tires. Any track-mounted equipment that is used shall not drive on paved BGC roads unless the road's surface is protected by plywood or steel trench plates.

1.04 SERVICE CONTINUITY

A. Within the areas of the Work, investigate and uncover all drainage lines, sewers, electrical ducts, and other piping in use or forming continuations of utility systems required for other buildings or improvements upon the campus, and maintain such services in operation during performance of the Work of the Contract.

B. Maintain continuous services to all existing facilities during the period of construction except for the following conditions:

1. Perform Work that involves "shut-down" of existing facilities at such times as will cause the least inconvenience to University activities, and at the discretion of Owner's Representative. Furnish Project Inspector written notice of exact date and time of "shut-down" at least 14 days in advance, unless a longer period is specified or shown on the Drawings.

2. Include in Contractor's bid the cost of overtime necessary for the Work. No extra payment will be allowed for overtime to meet this requirement or the Contract Schedule.

1.05 STORAGE

A. Contractor's use of the Project site for the Work and storage is restricted to the areas designated on the Drawings or as approved by Owner's Representative. Use of existing BGC mechanical and electrical rooms for storage of materials or furniture is prohibited.

1.06 TEMPORARY STAIRS, SCAFFOLD AND RUNWAYS

A. Provide all scaffolds, stairs, hoist plant, runways, platforms, and similar temporary construction as may be necessary for the performance of the Contract. Such facilities shall be of the type and arrangement as required for their specific use, substantially constructed throughout and strongly supported, well secured and complying with all applicable rules and regulations of the Industrial Accident Commission of the State of California and all applicable laws and ordinances.

B. Arrange for construction equipment access to areas which may be partly blocked by existing obstructions.

1.07 TEMPORARY HOISTS

A. Provide temporary hoist as required by job conditions for the installation of materials and equipment. Install and operate in accordance with all safety regulations of authorities having jurisdiction.

1.08 TEMPORARY SHORING AND BRACING

A. Provide temporary shoring and bracing as required for execution of the Work. All shoring and bracing shall comply with safety regulations of authorities having jurisdiction.

1.09 TEMPORARY BARRICADES

A. Provide temporary barricades as necessary. Maintain barricades in a clean and neat condition until no longer required and removal is approved or requested.

1.10 REMOVAL AND RECONDITIONING

A. Temporary facilities, barricades, utilities and other construction of temporary nature shall be removed from the Project site as soon as the progress of the work will permit in the opinion of Owner's Representative; and the portions of the Project site and building occupied by same shall be reconditioned and restored to original condition. For temporary utilities, refer to Section 01027 – Temporary Utilities.

B. Legally dispose of all debris resulting from removal and reconditioning operations.

1.11 CONTROL OF CONSTRUCTION WATER

A. Provide impermeable floor coverings and suitable dams to prevent damage by water used for the Work. Immediately clean up and remove all surplus water and water spilled in non-working areas. Do not allow water to overflow gutters or flood streets.

1.12 DUST CONTROL, AIR POLLUTION AND ODOR CONTROL

A. The Contractor shall employ measures to prevent the creation of dust, air pollution and odors.

1. Unpaved areas where vehicles are operated shall be periodically wetted down or given an equivalent form of treatment to eliminate dust formation.

2. All volatile liquids including fuels or solvents shall be stored in closed containers.

3. No open burning of debris, lumber or other scrap will be permitted.

4. Equipment shall be maintained in a manner to reduce gaseous emissions. When operating near building air intake, Contractor may have to direct exhaust downwind of intake through the use of flexible and rigid metal tubing or alternatively place carbon filters over the air intakes.

5. Low sulfur fuel shall be used for construction equipment.

6. Stockpiles of excavated materials shall be covered with material approved by Owner's Representative.

7. Contractor shall provide street sweeping whenever silt from construction site is carried over to adjacent public thoroughfares.

8. The requirements of this paragraph shall be included in the Base Bid.

1.13 NOISE CONTROL

A. The following noise control procedures shall be employed:

1. Maximum Noise: The Contractor shall use equipment and methods during the course of this work that are least disruptive to adjacent offices or residences. Noise levels shall not exceed 85 dBA at 50 feet as measured under the noisiest operating conditions.

2. Equipment. Jackhammers shall be equipped with exhaust mufflers and steel muffling sleeves. All diesel equipment shall have exhaust muffled. Air compressors shall be of a quiet type such as a "whisperized" compressor.

3. Operations: Machines shall not be left idling. Electric power shall be used in lieu of internal combustion engine power wherever possible. Equipment shall be maintained to reduce noise from vibration, faulty mufflers, or other sources.

4. Scheduling: Noisy operations shall be scheduled so as to minimize their disturbance to occupied adjacent areas and duration at any given location.

1.14 BARRICADE FENCING

A. Barricade chain link fencing shall be installed straight and plumb, using galvanized steel pipe and 9-gauge galvanized 2-inch diamond mesh wire fabric fastened to the posts and rails.

B. Posts shall be 2.375-inch O.D.; securely set in the ground and spaced a maximum of 10 feet-0-inch O.C. and 8 feet-0 inch height with a continuous top pipe rail. Posts shall not be set in or on existing concrete paving or walls to remain, but shall be located in soil, planter or brick paved areas.

C. Maintain fencing in a straight, clean and neat condition throughout construction as approved by Owner's Representative.

-- END OF SECTION 01029 --

SECTION 01030
GUIDELINES FOR OPERATIONS DURING PROTEST

PART 1 - GENERAL

1.01 PROJECT SECURITY

A. Project security within the work areas is the responsibility of the Contractor. However, there may be occasions where campus events elicit a protest response from campus and community constituencies. If protests occur at the project site, the Owner's Representative will insure a safe work environment for construction activities. If the safety of the site cannot be assured by the Owner (both for the construction personnel and for the equipment and materials), the Contractor will be directed to vacate the project site and asked not to return until the site can be secured.

1.02 PROCEDURES DURING A PROTEST

A. Known Protests (Most Common): In most cases, protests will be anticipated. Information is provided in advance to the University of California Police Department (UCPD), or the assemblage can be seen from the project site. Under these conditions, UCPD will dispatch officers to the site. UCPD will notify the Project Manager who will contact the Owner's Representative. Once on site, the supervising UCPD officer will introduce himself to the Contractor's Superintendent, the Owner's Representative and a review of the situation will be made. The supervising UCPD officer will determine if the Contractor should cease work in certain areas, relocate his work forces, or vacate the premises. The Owner's Representative will document the action in their daily report(s), and consideration may be given to the Contractor for an extension of contract time and/or cost. Any extension of contract time and/or cost will be by an executed Change Order.

B. Unknown Event: In the event that protest activities occur without prior notification and consultation with UCPD, the Contractor is to cease all work activities that may directly or indirectly cause harm to a worker or protestor. The Contractor should leave the affected area, and if possible, remove tools, equipment and construction materials. The Contractor's Superintendent will notify the Owner's Representative of the event. The Owner's Representative will record this activity in his daily report(s) and consideration may be given to the Contractor for an extension of contract time and/or cost.

C. If the Contractor is prevented from vacating the affected area by protestors, it shall be the responsibility of UCPD to provide safe egress for the Contractor.

D. Under no circumstances is the Contractor to confront protestors, incite activity, or physically impede their intended activity.

E. The Contractor shall be aware of the work area and cognizant of any unusual visitors to the project site.

-- END OF SECTION 01030 --

SECTION 01031
UNIT PRICES

PART 1 – GENERAL

1.01 WORK INCLUDED

A. Provide the Owner with Unit Prices specified herein.

1. 1 cubic yard of overexcavation per spec section 026113.

B. Specifications for Work Requiring Unit Prices: See applicable Sections.

1.02 DESCRIPTION OF UNIT PRICES

A. Provide the Unit Price(s) in the appropriate spaces on the Bid Form:

B. Amount of unit prices includes:

1. The cost of materials and installation billed to the Contractor, including taxes.
2. Delivery to the site (or removal from site and legal disposal of materials).
3. Handling of materials at the site, including unloading and storage.
4. Other expenses required to complete the installation.
5. Contractor's and subcontractor's overhead and profit.

1.03 CONTRACTOR RESPONSIBILITY FOR INSTALLATION

A. On notification of selection, enter into agreement with designated subcontractor.

B. Arrange for and process product data and samples as required.

C. Install and finish products in compliance with requirements of referenced Specifications Sections.

1.04 ADJUSTMENT OF COST

A. Base bid price shall be inclusive of all work shown and specified on the drawings and specifications. Unit Prices shall be the basis for determining payment to the contractor for work, incorporated into the contract with a Change Order, over and above (or less than) that work shown on the drawings and specifications.

1. Quantities installed shall be determined by field measurements. After performing Unit Price work as directed by Owner's Representative, Contractor shall take necessary measurements in the presence of the Owner's Inspector and shall submit calculation of quantities to the Owner for approval. Contractor shall notify the Owner one (1) day in advance of taking measurements.

B. At Contract closeout, reflect all approved changes in Contract Sum in the final statement of accounting.

-- END OF SECTION 01031 --

SECTION 01032
TRAFFIC CONTROL AND SITE ACCESSIBILITY

PART 1 - GENERAL

1.01 SUMMARY

A. General Requirement: The Contractor shall provide traffic control, fire protection provisions and site accessibility as outlined in these specifications.

1.02 ACCESS INTERRUPTION PERMIT

NOT APPLICABLE FOR THIS CONTRACT. 1.03 TRAFFIC AND PEDESTRIAN CONTROL

A. The Contractor shall implement effective pedestrian and vehicular traffic control during project working hours. This shall include maintaining access for the campus shuttles that operate throughout the campus. Campus shuttle route and schedule information is available at **http://pt.berkeley.edu/around/transit/routes**.

B. The Contractor shall provide flag persons throughout the course of the project, as required to meet construction operations.

C. The flag persons shall be under the control of the Contractor's superintendent such that they can redirect traffic as required to allow for the transit of emergency vehicles.

D. Before the end of each day's work, the Contractor shall ensure that all roads and paths disrupted by the work will not be a physical hazard during the hours when Contractor is off-site and in particular during the hours of darkness.

E. Contractor shall provide necessary beacons, guides and guard rails, project site lighting and traffic lights, temporary striping and marking and any other items needed to ensure the safe movement of vehicular and pedestrian traffic.

F. Remove promptly all signs, barriers and temporary traffic striping when no longer required.

G. Provide for the emergency passage at all times of fire trucks and ambulances through a temporary, 12 feet wide minimum, one-way traffic zone.

1.02.G Revise "12 feet" to "20 feet unless specifically approved by the CFM".

H. Prepare a traffic and pedestrian control plan for inclusion as an appendix to the Work Plan. The plan shall be submitted to the Owner's Representative for approval. The plan shall include a diagram indicating the location of various traffic control personnel, structures, equipment lighting and signage. No traffic control operations will be put into effect without and approved traffic control plan.

I. The traffic and pedestrian control plan shall include provisions for disabled access around the construction site. The length of the disabled access detour shall be minimized.

(Note: This is required by the CA Fire Code and CCR Title 19.)

J. Contractor shall provide one 12 feet wide minimum lane for vehicle access at all times. Total road closure will require the specific approval of the Owner's Representative, and will not be allowed unless adequate detour plans are presented.

K. It is the Contractor's responsibility to provide all slip-resistant trench plates, steel and wood, required by this work.

1.04 SITE ACCESSIBILITY

A. All open trenches shall be covered with steel plates at the end of every workday as required so roads, pathways and parking lots are left in serviceable conditions.

B. Steel plates shall be set in place with cut back asphalt as required to eliminate exposed edges of steel plates. Maximum discontinuity at edges shall be 1/2-inch. Cutback shall be maintained as required.

C. Flag control and temporary steel plates shall be provided as required to allow operation of all roads and all parking lots during construction.

D. Barriers shall be placed at each end of all excavations and at such places along excavations as may be necessary to warn all pedestrian and vehicular traffic to such excavations.

E. The amount of trench to be opened or left open at any one time is limited to a single segment between connection points. Excavation and pipe laying shall be coordinated to the end that the minimum of interference with public traffic will result. An open trench shall be defined as any trench, which has not been completely backfilled, satisfactorily compacted and capped with at least 1-inch of temporary paving (cutback) in paved areas. Final surface restoration of the trench shall be completed within one week of backfill.

F. No trench or excavation shall be left open to the public at the end of any day's work. Daily traffic control measures shall continue until cleanup activities have been satisfactorily completed and all of the Contractor's equipment has been removed from the traveled way area.

G. The Contractor shall place fence enclosures around open trenches in non-paved areas. Steel plates shall be used to cover open trenches in non-paved areas that are subject to vehicle or pedestrian traffic. Plywood sheets shall be used only where steel plates cause damage to planting or where they would render existing valves or other such utility appurtenances inaccessible as determined by the Owner's Representative.

H. The Contractor shall install temporary chain-link fencing around the job sites and any trees as necessary for the protection of pedestrians and planted materials, as well as for protection of the job site from vandalism. Fence location will be reviewed with an eye to preventing short cuts by pedestrians or vehicles across landscaped areas. Contractor may have to construct temporary access for disabled pedestrians.

I. Maintain adequate exit routes for the safety of building users at all times during construction.

J. In general two different exit routes are required from every building. Maintain at least half the width of existing passageways clear and free of obstructions, but in no case shall the clear exit path be narrower than 4 feet nor remove handrails from use.

K. The Owner shall be the enforcing agency with regard to maintaining safe exits and shall have the right to order the Contractor to take remedial measure, stop work or have work done by others and deduct the cost from the Contract, when required, to maintain safe exits

L. No parking stalls will be allotted to the Contractor for storage and placement of equipment and materials

1.05 CAMPUS EVENTS AND SPECIAL ACTIVITIES

Not applicable for this contract.

-- END OF SECTION 01032 --

SECTION 01035
DAILY WORK SHEETS

PART 1 - GENERAL

1.01 PROCEDURE

A. It is anticipated that from time to time, work may be performed on a time-and-material basis, because of un-foreseen field conditions.

B. The basis for the Contractor to be paid for this work will be time and material based on a detailed cost estimate prepared by the Contractor and submitted to and approved by the Owner's Representative before time-and-material work begins.

C. The Contractor will prepare a daily work sheet that specifically identifies the actual quantities of material and actual hours worked for personnel and equipment involved in an item of extra work. Day sheets MUST be turned in to the Owner's Representative by 10:00 A.M. the following workday. The Owner's Representative and the superintendent will have a brief meeting at 10:00 A.M. the workday following the day the extra work was performed. The purpose of the meeting will be for the project inspector to review the Contractor's daily work sheet(s) and compare with the Owner's Representative's documentation of the work, note any discrepancies, sign, and make a copy of the report for both parties. It is the Contractor's responsibility to ensure that work sheet is signed by the inspector. Late submission of work sheets will not be tolerated. Daily work sheets submitted after the meeting deadline will be rejected. The Contractor will not be entitled to compensation for extra work not documented and acknowledged by the end of the meeting between the project inspector and superintendent the workday following the occurrence of an item of extra work. There will be no exceptions to this rule.

D. No payment will be made to the Contractor for time and material work without a daily work sheet signed by the Owner's Representative.

-- END OF SECTION 01035 --

SECTION 01050
PROJECT PHASING

PART 1 - GENERAL

1.01 SUMMARY

A. Description:

1. For general organization, communication and coordination, the work of this contract is divided into phases as shown in paragraph 1.02 Table of Dates.

2. The Contractor and Owner's Representative shall work together to coordinate the actual timing of the phases based on the official Notice-to-Proceed and calendar day requirements.

3. Owner reserves the right to vary the sequence and timing of phases upon written notice to Contractor.

4. See Specification Section 01019 – Scheduling Requirements for detailed information on schedule submittal requirements.

5. All of the work required for each phase, as shown on the Drawings and as specified, shall be fully completed whether or not included in the phase description.

1.02 TABLE OF DATES

Phase	Project Duration (Calendar Days)*
Phase A: Corporation Yard Soil Removal and Associated Activities	90
Phase B (Bid Alternate): PCB Areas Soil Removal and Associated Activities	5

* Completion date will be based on date of Notice to Proceed plus the project duration.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

-- END OF SECTION 01050 --

SECTION 01351
ENVIRONMENTAL CONSIDERATIONS

CODES

California Code of Regulations, Title 23

California Fish and Game Code

California Government Code

California Health and Safety Code

California Penal Code

California Public Resources Code

California Water Code

Comprehensive Environmental Response, Compensation, and Liability Act

Federal Clean Air Act

Federal Clean Water Act

Federal Code of Regulations

Federal Endangered Species Act

Federal Rivers and Harbors Act

National Flood Disaster Prevention Act

National Flood Insurance Act

National Historic Preservation Act

GENERAL

California Health and Safety Code, Sections 25323.1, 25355.5(a)(1)(B), 25358.3(a), 58009, and 58010.

40 Code of Federal Regulations Part 300, National Contingency Plan (NCP)

US Code Title 42, Chapter 103, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

Environmental Health and Safety (EH&S) is the liaison with regulatory agencies when obtaining permits for environmental work.

Refer to the STORM WATER POLLUTION PREVENTION specification for more detail.

AIR QUALITY

Federal Clean Air Act

California Health and Safety Code, Division 26, Air Resources

Bay Area Air Quality Management District, Regulations

A. Demolition and construction activities shall be conducted in a manner that eliminates, as much as feasible, emissions of fugitive dust, aerosols, mist, smoke, odors and gaseous pollutants from the construction site. Elimination and suppression of air pollutants shall be accomplished using methods such as wetting, covering, filtration, adsorption, material substitution or any other method deemed effective by a consensus of university and supervising construction site representatives. Methods shall not pose additional hazards to site personnel nor soil or water through the transfer of captured pollutants to these receptors. Captured air pollutants must be handled in accordance with all applicable waste laws.

B. Activities were asbestos or asbestos containing materials are disturbed, removed, or modified must comply with BAAQMD notification and containment requirements.

C. Abrasive blasting operations must be entirely contained or employ a verified method that captures 98 percent by weight of blast media and removed surface debris.

D. All construction-related engines, both mobile and stationary, shall be operated and maintained in a manner that reduces emissions to the maximum extent feasible and shall be in compliance with current State and local requirements for the class of equipment or vehicle in use on site.

E. Engine idling shall be monitored and curtailed to the maximum extent feasible. Heavy duty diesel trucks with a gross vehicle weight rating of 10,000 pounds or heavier may not idle for more than 5 minutes within California's borders and shall meet the requirements of the most current California Air Resources Board (CARB) regulations.

F. All coatings, adhesives, and surface treatments in use containing Reactive Organic Compounds shall not exceed local and State regulatory limits on percent volatiles by weight or volume nor be used in a manner inconsistent with their intended use and shall be applied and stored in a method that minimizes to the maximum extent feasible fugitive emissions from these sources.

G. On site fueling, lubrication, and cleaning of vehicles shall occur in a method that eliminates spills and releases of fuel or volatile products. Fueling operations must include Vapor Recovery Equipment for both the fuel container and receiving vehicle or equipment where required.

H. Smoking is prohibited throughout the University of California, including the Richmond Field Station site.

WATER QUALITY

Federal Clean Water Act Section 401-402

Fish and Game Code Section 5650

Porter-Cologne Water Quality Control Act of 1969 (Water Code Sections 13000 et seq. and California Code of Regulations Title 23, Chapter 23)

Hazardous Waste Control Law (Health and Safety Code Sections 25100 et seq.)

San Francisco Bay Basin Regional Water Quality Control Plan Policies

A. Buildings shall be designed so that no waste-waters (such as steam condensate, cooling tower or boiler effluent) will be discharged either directly to surface waters or indirectly to surface waters via the storm drain system. It is preferable to route building floor drains and basement sumps to the sanitary sewer system to prevent water pollution from these sources.

B. Improper disposal of excess or remnant materials or chemicals is prohibited. No materials such as paint, stucco, plaster, cement slurry, oil, solvents, or other residual materials shall be disposed of directly to surface waters or wetlands or indirectly to surface waters via catch basins or any other outside storm drain. No material other than uncontaminated surface water runoff is allowed to enter the storm drain system. Residual materials or runoff from on-site cleaning of equipment, tools, brushes, etc. shall not be allowed to enter surface waters either directly or via the storm drain system.

STORMWATER MANAGEMENT

A. Impervious surface area on a site shall be minimized in order to mitigate the adverse effects of stormwater runoff on receiving waters. The campus will maintain the 'no net increase' of runoff per the final 2014 Long Range Development Plan for the Berkeley Global Campus at Richmond Bay (LRDP). This can be achieved through stormwater detention practices and designs that minimize impervious surfaces and employ such methods as open paving or porous pavement surfaces. Where appropriate, stormwater systems should be designed to permit aquifer recharge.

EROSION AND SEDIMENT CONTROL

Federal Clean Water Act Section 208

Resource Conservation Act (Public Resources Code Section 9001 et seq.)

Water Code Section 13240 et seq.

San Francisco Bay Basin Regional Water Quality Control Plan policies

A. If the project disturbs more than 1 acre of soil, a General Construction Permit must be obtained from the Regional Water Quality Control Board through the campus EH&S department.

B. If possible, construction activities involving grading, excavation, or other severe soil disturbance shall be timed so as to coincide with dry weather. This will minimize erosion and expedite the construction process. Appropriate erosion control measures must be taken if work is to be performed during the rainy season.

C. Standard erosion control practices will be implemented to control site runoff and prevent soil erosion during the rainy season. The erosion control methods chosen will depend on the specific site. The following standard erosion control policies should be adhered to:

1. The amount of land exposed at any time during construction should be minimized.
2. The period of exposure for land under construction should be kept to the shortest period that is practical.
3. Temporary vegetation or mulch should be used to stabilize critical areas where staging of construction cannot avoid a time lag prior to permanent cover for exposed lands.

4. Reasonable measures should be taken to prevent the transport of sediment by runoff from sites under construction.
5. Permanent final vegetation and structures should be installed as soon as practical in the construction process.
6. Wherever feasible, natural vegetation should be retained and protected.

D. Unnecessary soil disturbance is prohibited. This includes undue exposure or stripping of bare soils, soil compaction, or unnecessary alteration of existing grades or slopes. Where grading is necessary, practices should minimize erosion potential and facilitate vegetative establishment, if appropriate. Site grading should be performed in stages if possible in order to more effectively control erosion. Slope gradients and lengths should be kept to a minimum and terraces should be installed on long slopes. A terrace should be graded back towards the slope and drain with a gentle gradient to a stable outlet. The surfaces of cut and fill slopes should be left rough or be serrated so that they hold seeds well and allow for good vegetative establishment, if appropriate.

E. Development should fit the existing topography and soils as much as possible to minimize land disturbance and erosion potential. Grading that will result in radical loss of vegetation and/or topsoil should be avoided or re-evaluated. Grading that will interrupt natural drainage patterns or result in aesthetic degradation should be avoided. Grading on steep slopes (greater than 25%) should be avoided.

CREEKS AND WETLANDS

Federal Clean Water Act Section 404

Federal Rivers and Harbors Act Sections 9-10

Bay Conservation and Development Commission Act (Government Code Sections 66600 et seq.)

California Department of Fish and Game policies

California Environmental Quality Act (Public Resources Code Sections 21000 et seq.)

Coastal Act of 1976 (Public Resources Code Sections 30000-30900)

Fish and Game Code Sections 1601-1606

San Francisco Bay Basin Regional Water Quality Control Plan policies

Water Code Section 13142

A. All required permits shall be obtained from the appropriate regulatory agencies working with the campus EH&S department

B. Physical alteration of creek channels shall be avoided unless there is no practical alternative. Alteration includes culverting, channelization, channel confinement, extensive bridging or lining of the steambed or banks with concrete or other artificial materials. Diversion, realignment or other alteration of the natural path of creek channels is prohibited. Excavation or filling of any creek channel, marsh, or any wetland area is prohibited.

C. Encroachment upon creekside areas or wetlands shall be avoided. An undisturbed buffer zone shall be maintained between buildings or structures and creek or wetlands areas per the UC

Berkeley Landscape Master Plan which designates Zone 1, the riparian zone, as a section at least 100 feet in width, centered on the stream course. Zone 2, a broader zone that includes other rustic woodland areas adjacent to the riparian zone shall also be protected. Vegetation disturbance or alteration shall be avoided in these natural areas.

D. Designs should not detract from the visual amenity and variety provided by creeks or wetlands or other natural areas. Designs should not affect the open space or recreational and educational functions of any critical or sensitive ecological habitats.

E. An undisturbed buffer zone of at least 100 feet in width, centered on the stream course shall be maintained between construction site activities and creek or wetland areas. Storage or staging areas for equipment, building materials, chemicals, etc., shall be located as far away as is practical from creek or wetland areas and be stored in covered secondary containment.

E. Excavation or filling or other disturbance of streambeds, streambanks, or wetlands during construction is prohibited. Siltation or sedimentation of creek channels or wetlands as a result of site runoff or grading is prohibited.

SENSITIVE AREAS

Bay Conservation and Development Commission Act (Government Code Section 6660 et seq.)

Coastal Act of 1976 (Public Resources Code Sections 30000-30900)

California Department of Fish and Game policies

California Environmental Quality Act (Public Resources Code Sections 21000 et seq.)

Federal Endangered Species Act

National Historic Preservation Act of 1966 Section 106

A. Development upon identified aquifer recharge areas should be designed so as to minimize impervious surface area on the site.

B. Development should accommodate sites or areas of historical or archeological significance. Approval must be obtained before altering any archeological, historical, or cultural resource eligible for, or listed in the National Register of Historic Places.

C. Unnecessary vegetation disturbance is prohibited. This includes unnecessary stripping, removal, trampling, or other damage. Compaction, excavation, paving, or addition of soil (filling) of root zone areas within the drip line (generally the area surrounding the stem roughly equal to the diameter of the canopy) of permanent vegetation is prohibited. Vegetation that must be removed will be left on the site as long as possible.

D. Development shall not be detrimental to known endangered plant or animal species or their critical habitats or migration routes. In general, wildlife habitat should be preserved and enhanced to the extent possible.

E. Activities within 100 feet of the high tide mark of San Francisco Bay including dredging or filling, grading, or substantial change in land use requires the approval of the San Francisco Bay Conservation and Development Commission.

SITE HAZARDS

Alquist-Priolo Special Studies Zone Act (Public Resources Code Sections 2621 et seq.)

Cobey-Alquist Flood Plain Management Act (Water Code Sections 8400-8415)

National Flood Insurance Act of 1968

National Flood Disaster Prevention Act of 1973

A. All development within any primary 100-year floodway channel is prohibited. All structures built on the 100-year floodplain (Zone A as designed on FEMA Flood Insurance Rate Maps) must be floodproofed according to standard practices. Development on the 100-year floodplain that poses an obstruction to floodwaters or reduces the stormwater carrying capacity of the channel or floodplain should be avoided. Development should also be avoided in areas subject to tidal inundation or coastal flooding hazards. Development should be avoided on sites having groundwater levels close to the land surface if this interferes with the function of planned facilities or land uses.

B. Construction within 50 feet of a known active fault trace is prohibited. Development upon suspected fault zones or other earthquake hazard areas should be avoided if possible. If this is not possible, special consideration should be given to placing and constructing buildings so as to reduce the hazard to a minimum.

C. Development that will disturb colluvial or landslide bodies should be avoided.

NUISANCE ABATEMENT

Penal Code Section 375

A. Standard control measures will be implemented to mitigate both noise and dust created by construction activities.

B. Building designs and landscaping plans shall not attract or harbor annoying pests such as rodents, insects, pigeons, etc.

C. The development site should be free of noxious odors caused by either on-site or off-site conditions.

-- END OF SECTION 01351 --

SECTION 01352
STORM WATER POLLUTION PREVENTION

PART 1 - GENERAL

1.01 BACKGROUND

Storm drains discharge directly to creeks and the Bay without treatment. Discharge of pollutants (any substance, material, or waste other than uncontaminated storm water) from this project into the storm drain system is strictly prohibited by the California Regional Water Quality Control Board's (RWQCB) Water Quality Control Plan (Basin Plan), except as provided in Paragraph 3.08 of this specification.

1.02 GENERAL CONTRACTOR SCOPE

A. Provide all material, labor, equipment, for installation, implementation, and maintenance of all surface-water pollution prevention measures. Contractor will not be required to maintain post-construction pollution prevention structures. This work includes the following:

NOTE:

1. All sites that will create and/or replace greater than 2,500 square feet of impervious surface area must comply with all design and operational requirements outlined for Non-Traditional Permittees in the State Water Board's Phase II Small MS4 General Permit, Waste Discharge Requirements Order No: 2013-0001-DWQ. Post-Construction Site Design Measures will be documented with the State's 'Post-Construction Water Balance Calculator' and additional hydro-modification facilities will be registered with UCB EH&S. Projects must also submit a Storm Water Pollution Prevention Plan to UCB EH&S.

2. Construction sites that will disturb (e.g., digging, trenching, grading, clearing, filling) greater than 1 acre of site soil will be required to register for the State Water Board's Construction General Permit Order No: 2009-0009 in SMARTS. Paragraphs in this specification preceded by " ••• " are specific requirements to these sites.

3. Furnishing, placing, and installing effective measures for preventing erosion and runoff of soil, silts, gravel, hazardous chemicals or other materials prohibited by the San Francisco Bay Region Water Quality Control Board from entering the stormwater drainage system.

4. Management of on-site construction materials in such a manner as to prevent said materials from contacting stormwater or wash water and running off into the storm drain system.

5. Complying with applicable standards and regulations per Paragraph 1.03.

6. Include post-construction stormwater pollution prevention structures in the stormwater pollution prevention plan. Contractor shall use construction drawings as the reference for post-construction BMPs.

B. Specifications Included By Reference:

1. Regulatory Requirements, Section 01012
2. Contractor's Use of Project Site, Section 01029
3. Excavation and Handling of Contaminated Material, Section 02 61 13 5

C. In this section, the term "storm drain system" shall include storm water conduits, storm drain inlets and other storm drain structures, street gutters, channels, watercourses, creeks, lakes, and the San Francisco Bay.

D. Sanitary sewer discharge regulations are intended to provide protection of the sanitary sewer system and East Bay Municipal Utility District's (EBMUD) water pollution control plant. In this section, "sanitary sewer" shall include any sanitary sewer manhole, clean-out, side sewer or other connection to the EBMUD wastewater treatment plant.

E. Contractor shall have storm drain pollution prevention measures in place and follow this specification during the rainy season (October 1 through May 1) and anytime rain is predicted in the San Francisco Bay Area. It is the responsibility of the Contractor to be prepared for a rain event in the non-rainy season, and to be aware of weather predictions. The University is not responsible for informing the contractor of rain predictions.

F. Sanitary sewer blockage will likely result in a back-up and overflow to the storm drain system. The contractor shall immediately notify the project manager or the inspector of record if there is a clogged sanitary sewer.

G. Contractor shall not allow any non-stormwater to enter the storm drain system. Non-stormwater includes domestic supply water used to wash streets, painting and drywall equipment, tools, equipment, or vehicles.

1.03 REGULATIONS AND STANDARDS

A. Contractor shall comply with the following applicable regulations:

1. Clean Water Act, United States Environmental Protection Agency, and Porter-Cologne Clean Water Act, State of California.

2. "San Francisco Bay Basin (Region 2) Water Quality Control Plan" (Basin Plan), California Regional Water Quality Control Board, 1995 Edition.

3. Regional Water Quality Control Board – Construction General Permit — Stormwater Pollution Prevention Order No: 2009-0009-DWQ.

4. Small Municipal Separate Storm Sewer System (MS4) General Permit (Section F. Non-Traditional Small MS4 Permittee Provisions), Waste Discharge Requirements Order No: 2013-0001-DWQ.

B. Contractor shall comply with the following standards and guidelines on storm drain pollution prevention:

1. "Stormwater Best Management Practice Handbook – New Development and Redevelopment", California Stormwater Quality Association

   Order From: California Stormwater Quality Association,
   P.O. Box 2105, Menlo Park,
   CA 94026-2105
   Phone: (650) 366 -1042

2. "Erosion and Sediment Control Field Manual", California Regional Water Quality Control Board (RWQCB)—San Francisco Bay Region, Third Edition, July 1999.

   Order From: San Francisco Estuary Project
   1515 Clay Street, Suite 1400
   Oakland, CA 94612
   (510) 622-2465

3. "Construction Site Monitoring Program Guidance Manual", CalTrans

   Order From: Storm Water Liaison, Caltrans Division of Environmental Analysis,
   MS 27, P.O. Box 942874
   Sacramento, CA 94274

1.04 SUBMITTALS/DELIVERABLES

A. Submit a Storm Water Pollution Prevention Plan (SWPPP) to the Capital Projects project manager for final EH&S approval. Contractor shall not disturb soil onsite until the University approves the plan.

•••If the project disturbs greater than 1 acre of soil, the University will send a "Notice of Intent" (NOI) to the RWQCB, with the applicable fee (Contractor shall supply Owner with the check for this fee). Upon completion of the project, the University will send a "Notice of Termination" (NOT), as required by the RWQCB. All permit-related documents shall be submitted to the RWQCB by UC Berkeley EH&S.

The plan shall include the following:

1. Title Page: The title page should primarily identify that the document is a SWPPP. Elements that should be included on the title page are the following:
   a. Name of the project, and project number,
   b. Owner and contractor of the project,
   c. Contact person(s)/address/daytime and emergency phone number.
   d. ••• Waste Discharge Identification Number (WDID No.) for the project. This number is assigned by the RWQCB upon submission of the NOI. The number should be included in the plan after it is assigned.

2. •••Certification Page: The contractor shall include a certification page immediately following the SWPPP title page. This page will be signed by the University and state the following:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted, is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

   _____ _____

   Name, Title Date of Preparation

3. Amendments: The contractor shall amend the SWPPP whenever there is a change in construction or operations which may affect the discharge of significant quantities of pollutants to surface waters, ground waters, or a municipal separate storm sewer system. The SWPPP should also be amended if it is in violation of any condition of the State of California General Permit or has not achieved the general objective of reducing pollutants in storm water discharges. In addition, the University may require the contractor to amend the SWPPP if the discharge is in violation of the RWQCB San Francisco Bay Region Basin Plan.

   The following items should be discussed in the Amendment section as appropriate:

   a. Location of proposed change should be shown on the site map, and referenced in the Amendment section of the SWPPP.
   b. Describe the existing condition and why it is being amended.
   c. Document who requested the amendment.
   d. Describe the new control measure.
   e. Attach a certification page to the beginning of the amendment.

4. Table of Contents: Include a table of contents in the SWPPP, including page numbers.

5. Introduction: The introduction shall provide the following information:

   a. Type and size of the construction project, including land area in acres.
   b. Project location, including county, and address.
   c. The beginning date of the project groundbreaking.
   d. The beginning and end dates for all phases.

6. Source Identification and Best Management Practices

Identify stormwater and non-stormwater pollutant sources at the construction site. Choose an appropriate stormwater pollution prevention best management practice (BMP) to control the pollution source.

Provide in the SWPPP a geographical description of potential stormwater pollution sources. Topographic and site maps shall be used for this purpose.

a. Topography Map

The map shall extend approximately one quarter mile beyond the construction site boundary and show the following: the construction site, surface water bodies (including springs and wetlands), and known wells, an outline of off-site drainage discharging into the construction site, general topography, and the stormwater discharge locations for construction site stormwater.

Contractor shall use a U.S. Geological Survey quad map and shall modify it to show the required information. Include dimensions, scale, legends, flow direction of water bodies, run-on and run-off water and drainage, drainage locations, and delineation of permanent erosion and sediment control measures.

b. Site Map

The contractor shall identify pollution sources, construct and implement stormwater and non-stormwater pollution prevention BMPs at the construction site. The contractor shall implement the SWPPP. Contractor shall include SWPPP for the post-construction pollution sources and erosion and sediment control BMPs. A separate map may be used for showing the locations of the post-construction BMPs.

The site map shall be one or more detailed map(s) showing the location of pollution sources, (e.g., construction site drainage patterns, grading activities that change drainage patterns, drain inlets, hazardous materials storage, and contaminated soil). The site map shall show the location of BMPs designed to prevent pollution sources from causing stormwater or non-stormwater pollution. The Contractor will choose the best available performance-based technology and methods to prevent storm water pollution for construction site activity. Many of those methods are detailed in the reference materials listed in Paragraph 1.03.

The following is a list of BMPs, geographic features or pollution sources to be shown (if applicable) on the site map. Further detail on these topics is in Part 3.0 of this Section (Paragraph number in parentheses).

- Storm water flow drainage patterns and grading activities that change drainage patterns (3.01);
- Perennial, intermittent or seasonal surface water bodies, oceans, lakes, rivers, creeks or streams, ponds, springs, and wetlands. (3.02)
- Areas of existing vegetation (3.03)
- Areas of disturbed soil (3.04)

- Existing and planned paved areas and buildings (3.05)
- Dust suppression water management (3.06)
- Fire hydrant protection (3.07)
- De-watering and sediment settling (3.08);
- Erosion and sediment control measures (3.09);
- On-site soils movement and storage (3.10);
- Site ingress and egress mud tracking prevention (3.11);
- Storm drain inlet protection (3.12);
- Construction materials storage (3.13);
- Concrete, mortar, saw cutting (3.14);
- Sanitary Sewer Discharge Point Identification (3.15);
- Fueling, washing and equipment cleaning (3.16);
- Building wash or hydro-blasting water management (3.17);
- Inspection, monitoring and maintenance of BMP control structures (3.18);
- Spill Prevention and Control (3.19);
- Water Main Break Contingency Plan (3.20);
- House Keeping Practices (3.21);
- Post-construction stormwater run-off control (3.22);
- Personnel training (3.16);
- List of contractors and phone numbers (3.17);
- Or other appropriate site-specific storm drain pollution prevention methods necessary to achieve the objectives stated in subpart 1.02(A).

7. Impervious Surface Calculations: All projects regardless of size, will document installations or changes to: landscaping, roofing, walkways, permeable or impermeable surfaces as outlined in both Water Board Order Numbers: 2009-0009-DWQ and 2013-0001-DWQ by using the State Water Board's Post Water Balance Calculator.

1.05 ENVIRONMENTAL ENFORCEMENT

The RWQCB, East Bay Municipal Utilities District (EBMUD), the City of Richmond, Contra Costa County Health Services Department, and UC Berkeley have authority to enforce, through codified regulations, any portions of this Section that if not implemented may violate applicable regulations. Agency or UC Berkeley enforcement may include but is not limited to: citations, orders to abate, bills for cleanup costs and administration, compensatory damages, civil suits, and/or criminal charges. Contract compliance action by UC Berkeley shall not be construed to void or suspend any enforcement actions by these or other regulatory agencies.

PART 2.0 - MATERIALS

2.01 GENERAL

Provide materials as required for execution of the work.

PART 3.0 - EXECUTION

For each applicable sub-parts below, the contractor shall delineate on the site map BMP locations and provide a detailed description in the plan for pollution prevention structures or methods that will be constructed, implemented and maintained on site.

3.01 STORMWATER DRAINAGE PATTERNS AND GRADED SLOPES

A. Drainage patterns shall be shown on the site map. Drainage patterns that are modified during the construction of the project should be clearly shown on the site map. All slopes should indicate grading ratio and flow direction.

B. The size of the construction site (in acres).

C. The run-off coefficient of the site before and after construction

D. The percentage of the area of construction that is impervious before and after construction.

3.02 SURFACE WATER LOCATIONS

All surface water locations shall be clearly delineated on the site map. Surface water bodies include: oceans, lakes, rivers, creeks or streams, ponds, springs and wet lands. Include intermittent or seasonal surface water bodies. Estimate the storm water flow onto the site, assuming a 10-year 6-hour rain event. Estimate the volume of water the site would contain in trenches, excavations, pier holes, or pits for the different phases of work.

3.03 AREAS OF EXISTING VEGETATION

Contractor shall protect existing vegetation that is to be preserved on the site from mechanical or other injury during the project. Areas of existing vegetation shall be clearly delineated on the site map.

3.04 AREAS OF DISTURBED SOIL

Contractor shall clearly identify on the site map all areas of soil disturbance. These areas shall include soil removal or augmentation, such as holes, pits, excavations, trenches, berms, slopes, fill, and imported top soil.

3.05 EXISTING AND PLANNED PAVED AREAS AND BUILDINGS

Areas that are covered by concrete, asphalt, or other permanent coverage of the soil, including roof tops shall be clearly delineated on the site map. Imprints of buildings shall also be indicated whether they are permanent or temporary. Pre-construction and post-construction changes in permeable or impermeable surfaces, roof tops, drainage or landscaping, etc., must meet State Water Board's Post Water Balance Calculator requirements.

3.06 DUST-SUPPRESION-WATER MANAGEMENT

Contractor shall use best available dust suppression equipment and methods to control dust so that the dust does not cause discomfort or nuisance to occupants of the project site neighboring property. Contractor shall control dust suppression water so that it is effective in controlling dust, but does not enter the storm drain system. Contractor shall describe their dust suppression water management methods in this plan.

3.07 FIRE HYDRANT PROTECTION

Contractor shall protect fire hydrants on and near the project site from mechanical damage. If the project personnel cause damage that results in a release of fire suppression water, the Contractor shall implement the procedures described in subpart 3.20.

3.08 DE-WATERING, FIRE TESTING WATER AND SEDIMENT MANAGEMENT

A. If hydrant, fire suppression or other testing require discharging water, the UC Berkeley Campus Fire Marshal will approve all plans and methods for discharge or collection of such water. Contractor will be required to document discharge activity with the UC Berkeley 'Water Discharge Form'.

B. If stormwater or groundwater in site excavations or drilled holes, (e.g., trenches, pits, pier holes, footings), needs to be removed, it shall be made clean by filtering, settling, or other method capable of removing solids and suspended particles from this water prior to discharge to the storm drain system. The Contractor shall ensure that this discharge complies with all applicable provisions of the Basin Plan (see Paragraph 1.01 of this Section).

C. If excavation water is domestic supply water, or the water is contaminated with a hazardous substance, then the contractor shall dispose of according to guidance from the Owner's Representative. For disposal authorization, the contractor shall contact the Owner's Representative to determine the discharge requirement. The Owner's Representative will work with UC Berkeley Office of Environment, Health & Safety (EH&S) who will establish the discharge requirements.

If the Contractor suspects the presence of contaminated groundwater, or domestic supply water, the Contractor shall immediately notify Owner representative or EH&S at (510) 642-3073. The Contractor shall not attempt to pump out or treat any material suspected of containing a hazardous material or petroleum product.

3.07 Add:
The contractor shall maintain a clear space of a minimum of 3 feet around all fire hydrants. All fire hydrants shall be located outside of the construction fencing. Ant exceptions must be specifically approved by the CFM.
Adequate clearance around fire department connenctions to fire sprinkler systems as approved by the CFM must be maintained at all times.

3.09 DESCRIPTION OF EROSION AND SEDIMENT CONTROL MEASURES

Provide a description of erosion and sediment control measures that will be used on the site, and correlate the description with the site map (may be listed on the map in a comments section). Areas requiring erosion control measures are exposed soil, such as soil piles, bare soil, sloped soil, and any area of disturbed soil. Erosion control measures include paving, tarp placement, soil blankets, mulching, seeding, hydro-mulching, the use of straw wattles, and spreading straw. Sediment control measures include drain inlet protection, filter fabric, geo-textile silt fencing, gravel placement, gravel or sandbag placement, sediment settling tanks, and straw wattle placement. This list is not all inclusive and the contractor should refer to the resources listed in Paragraph 1.03 of this Section. Both erosion and sediment control practices are designed to be implemented as an integrated system of pollution control. Without erosion controls, sediment controls are easily overwhelmed and will not prevent pollution.

3.10 ON-SITE SOILS MOVEMENT AND STORAGE

The Contractor shall describe and implement proven methods to prevent erosion from soils stored on site.

3.11 SITE INGRESS AND EGRESS MANAGEMENT MUD TRACKING PREVENTION

The Contractor shall ensure that mud is not tracked from the site onto public or campus roads. Contractor shall select the most appropriate BMP to accomplish this requirement.

3.12 STORM DRAIN INLET PROTECTION

The Contractor shall protect storm drain inlets from receiving sediment, hazardous chemicals, gasoline, diesel, oil or grease, trash, debris or other pollutants from the construction site.

3.13 CONSTRUCTION MATERIALS STORAGE

A. Storage and exposure of raw materials, byproducts, finished products, and hazardous materials containers shall be controlled as described below:

1. All construction materials shall be stored at least ten feet away from storm drain system inlets, catch basins, and curb returns.
2. The Contractor shall not allow any material to enter the storm drain system.
3. At the end of each working day, the Contractor shall collect and prepare for disposal all scrap, debris, and waste material generated by project activities.
4. During wet weather or when rain is in the forecast, the Contractor shall store materials, (that can flow or be transported by storm water), inside a building or under a secured waterproof covering to prevent accidental release to the storm drain system. Examples: use sealed debris bins in rainy weather; store fuel containers out of the weather; cover soil, sand, or debris piles with tarps.
5. The Contractor is responsible for ensuring that storage and disposal of all hazardous materials brought on site for this project (e.g., coatings, thinners, solvents, and fuels), and all hazardous waste generated during project activities (e.g., waste oil) is in compliance with all applicable federal, state, and local standards and requirements.
6. Liquid materials shall be stored in secondary containment. The containment shall be designed to hold at least 110% of the volume of the largest stored container.

3.14 CONCRETE, MORTAR, SAWCUTTING

A. For concrete or mortar application to be performed on site (if any), the Contractor shall comply with the following provisions:

1. Washing sweepings of exposed aggregate concrete into the street or storm drain system [as defined in paragraph 1.02 (C)] is prohibited. Collect and return sweepings to aggregate base stockpile, or dispose of as construction debris.

2. Do not wash out concrete trucks and equipment into the storm drain system. Whenever possible, perform washout of concrete trucks (if any) and equipment off-site where discharge is controlled.

3. If on-site washout of trucks and equipment is necessary, then the Contractor shall comply with the following procedures:

    a. Locate washout area at least 50 feet from storm drains, open ditches or water bodies, preferably in a dirt area.

    b. Do not allow storm water run-off from the washout area.

    c. Construct a temporary pit or bermed area large enough to contain the wash-water and surplus concrete waste.

    d. Wash out concrete waste into the temporary pit where the concrete can set, be broken up, and then disposed of as construction debris. If the volume of water is greater than what will allow concrete to set, allow the wash water to concentrate and/or evaporate, if possible. Otherwise, allow water to settle before filtering it, and then pump to the sanitary sewer (as long as the pH is less than hazardous waste limit of 12.5).

4. Wash-water from tools used for mixing mortar, in sheet rock work, plaster, drywall, mortar work or similar work shall be settled before disposal to the sanitary sewer. Solids shall be disposed to the debris bin. This wash-water is prohibited from stormwater discharge.

5. Concrete sawing or drill cutting lubricating/cooling water or shall be collected using a wet-vacuum. The lubricating/cooling water shall be settled before disposal to the sanitary sewer. Solids shall be disposed to the debris bin. This lubricant/cooling water is prohibited from stormwater discharge.

3.15 SANITARY SEWER DISCHARGE POINT IDENTIFICATION

If the Contractor will be disposing of water from a settling operation, or any other water approved by EH&S for sanitary sewer disposal, the Contractor will verify with the Physical Plant-Campus Services (PP-CS) utilities department [UC: or will this coordination occur with BGC/Justin?] that the manhole used for disposal is a sanitary sewer and not a storm drain. (Note: Do not assume that a manhole is a sanitary sewer, even if the words “sanitary sewer” are embossed on it. Sometimes utility maps and manhole cover designations are incorrect.) The Contractor shall be given PP-CS contact information by the PM.

3.16 FUELING, WASHING AND EQUIPMENT CLEANING

A. The Contractor shall not perform vehicle cleaning on site, unless a properly designed wash area prevents run-off from entering the storm drain system. Domestic water supply is prohibited from entering the storm drain because it contains chloramines. It can go to the sanitary sewer if the sediment is allowed to settle before discharge and it meets the standards of the EBMUD Wastewater Discharge Permit pollutant strength limits.

B. If fueling must occur on-site, use designated areas away from drainage. Locate on-site fuel storage tanks within a bermed area designed to hold the tank volume. The area should be covered so that rain water will not get into the bermed area. The bermed area shall be lined so that leaks, spills or drips will not contaminate the soil. Use secondary containment while fueling or changing fluids to catch drips or small spills.

C. The Contractor shall dispose of wash water from the cleaning of non-hazardous water-based coating equipment (such as latex paints or drywall compounds) and tools to the sanitary sewer. Unused latex paint, oil based paint, used or new paint thinner and solvents are prohibited from disposal to the sanitary sewer and the storm drain system. The Contractor shall dispose of these wastes in accordance with federal, state, and local hazardous waste and solid waste regulations.

3.17 BUILDING WASH OR HYDRO-BLASTING WATER MANAGEMENT

Contractors are required to follow the attached "Procedure for Wastewater Management from UC Berkeley Building Washing and Maintenance Operations" if performing this work. These procedures are in Attachment 1 of this Section.

3.18 INSPECTION, MONITORING AND MAINTANCE OF POLLUTION CONTROL SYSTEMS

A. Inspect the site before, after, storm events, or during a 24-hour storm event. Inspections shall be done during the storm water observation period (October 1 through April 1) to ensure that storm drain pollution prevention controls are in place. Provide documentation of these inspections, and improvements or modifications of the control systems. Contractor shall designate an inspector and list the name of the inspector in the list of contacts page as described in subpart 1.04(A)(1)(c). Contractor shall maintain structural controls and updates/amendments to the SWPPP. Representatives from UC Berkeley will conduct periodic inspections of the site to verify adequacy of storm drain pollution prevention controls and compliance with applicable regulations and standards as stated in subpart 1.03(A).

B. UC Berkeley will disclose historic site activities that may have included the use of hazardous materials (e.g., gas station, dry cleaner, underground storage tank, and manufacturing) and that have or are suspected to have caused pollution at the site. The University will write and implement a plan to monitor, sample and analyze stormwater discharges for pollutants related to the construction activity. If applicable to site conditions, Contractor shall include this hazardous materials monitoring plan in the SWPPP.

3.19 SPILL PREVENTION AND CONTROL

A. The Contractor shall take precautions to prevent accidental spills of pollutants, including hazardous materials brought onsite by the Contractor. However, in the event of a spill, the Contractor shall be held responsible for the following:

1. Immediately contain and prevent leaks and spills of prohibited pollutants from entering the storm drain system. Clean up the spill and label the container. Store the container in a safe place and contact the PM to arrange disposal of the waste. The Contractor shall keep a spill kit on site at all times for this purpose.
2. Contractor shall comply with all federal, state, and local hazardous waste requirements and ensure that no spilled materials are washed into the stormwater or non-stormwater systems.

3. Report any hazardous or unknown material spills immediately to the EH&S at 510-642-3073. If a spill occurs after hours or on a weekend, call 9-911 from campus phones (911 from off-campus phones, or 642-3333 from cellular phones) to contact the UC Berkeley Police Department.

The Contractor is responsible for ensuring that its employees and subcontractors (if any) working on site are aware of the location of the campus phone nearest the project site.

3.20 WATER MAIN AND SANITARY SEWER LINE BREAK CONTINGENCY PLAN

A. If working on or near a water main line or sanitary sewer line, the Contractor shall have a written emergency response plan that states procedures for responding to a break and release of supply water to the storm drain system. The Contractor shall meet the following requirements:

1. Water Main Work

a. Determine the direction of water flow if the main were to break.

b. Build a containment berm between the work area and the storm drain inlet(s) that the water would flow into. Make the containment structure large enough to hold the water so that it can be pumped to a sanitary sewer.

c. Build this containment structure before digging.

d. If there is a water main break, pump the water that collects in the containment structure to a sanitary sewer.

e. If the containment fails, prevent chlorinated water from entering the storm drain system by placing dechlorination sodium sulfite tablets in the sewage according to Attachment 2 of this Section.

f. Put in place, before digging, sediment control structures upstream of drain inlets and at drain inlets.

g. If a break occurs contact the PM or inspector of record immediately. Include in the plan the phone numbers of the PM and EH&S contacts.

2. Sanitary Sewer Line Work

This sub-part applies only to Contractors that are hired to work on sanitary sewer lines and are trained to work near sewage.

a. Determine where the sewage will flow if the work could cause a blockage.

b. Build a containment structure between the work area and the storm drain inlet(s) that the sewage water would flow into. Make the containment structure large enough to hold the sewage flow so that it can be pumped to a sanitary sewer.

c. Build the containment before working on the sewer line. Put in place, before digging, solids (toilet paper, etc.) control structures upstream of drain inlets and at drain inlets.

d. If a sewage blockage occurs, pump it to a sanitary sewer, and do not allow it to flow into the storm drain system.

3.20 ADD:
Since a water main break may result in building fire protection systems and/or fire hydrants being out of service, the emergency plan shall be submitted to the CFM for review and approval. The emergency plan shall include:
1. a map of the work area
2. the location of all water mains in the immediate area.
3. the location of water main valves the must be closed to stop the flow of water.
4. the CFM must be notified of the water main break immediately.
5. Since a water main break will most probably result in fire hydrant(s) and/or fire sprinkler system(s) being out of service, the contractor must have provisions to immediately back-feed fire sprinkler systems and fire hydrants.

e. If the containment fails, prevent chlorinated water from entering the storm drain system by placing dechlorination sodium sulfite tablets in the sewage according to Attachment 2 of this Section).

f. If a sewage blockage or spill occurs contact the PM or inspector of record immediately. The PM will immediately notify EH&S. Include in the plan the phone numbers of the PM and EH&S contacts.

3. Excavation Work

This Paragraph applies to Contractors that excavate in the vicinity of sanitary sewer lines and cause or discover a sewage spill, leak or blockage.

a. Immediately notify the PM. The PM will immediately notify EH&S. Include in the plan the phone numbers of the PM and EH&S contacts.

3.21 HOUSE KEEPING PRACTICE

The Contractor shall implement the following applicable good housekeeping practices:

- Store materials that have the potential to be transported to the storm drain system by storm runoff or spillage away from areas of heavy traffic and under cover in a contained area or in sealed waterproof containers.
- Use tarps on the ground to collect fallen debris or splatters that could contribute to storm water pollution.
- Secure opened bags of powdered materials (if any) that could contribute to storm water pollution and visible dust emissions.
- Pick up litter, construction debris, and other waste generated by project activities daily from adjacent areas, including the sidewalk area, gutter, street pavement, and storm drains impacted by the project. All wastes shall be stored in covered containers, disposed of, or recycled immediately.
- Clean sidewalks, driveways, or other paved areas within the construction site to eliminate or prevent mud-tracking conditions. Vacuuming, power sweeping, or manual sweeping is acceptable. Dispose of sweepings in a place that will not pollute the storm drain system. Domestic water may be used but it shall be contained and directed to landscapes or the sanitary sewer. The discharge of wash-water to the storm drain system is prohibited.
- Inspect vehicles and equipment arriving on-site for leaking fluids, and promptly repair leaking vehicles and equipment. Use drip pans to catch leaks until repairs are made.
- Avoid spills by handling materials carefully. Keep a stockpile of appropriate spill clean-up materials, such as rags or absorbent materials, readily accessible on site. Clean up all spills of materials brought on site for project activities according to Subpart 3.19.
- Train employees regularly on good housekeeping practices and procedures. Assign responsibility to specific employees for inspecting good housekeeping, and responding to spills.

3.22 POST-CONSTRUCTION STORMWATER RUN-OFF CONTROL MEASURES

A. All permanent structural and nonstructural control measures that are planned for the project to control pollutants in stormwater discharges after construction is completed shall be delineated on a site map. These controls shall be part of the design of the project and included in the architectural drawings. Post-construction BMPs include, but are not limited to:

1. Minimization of land disturbance
2. Minimization of impervious surfaces
3. Treatment of stormwater run-off using infiltration
4. Water detention/retention
5. Bio-filter BMPs
6. Efficient irrigation systems
7. Ensuring that interior building drains and trash enclosures are tied to the sanitary sewer system, and not the stormdrain system
8. Appropriately designed and constructed energy dissipation devices

B. Post construction BMPs must be consistent with all local post-construction stormwater management requirements, policies and guidelines as mandated by:

1. State Water Resources Board Order No. 2013-0001 DWQ – Phase II Small MS4 Permit for sites below an acre and;
2. ••• State Water Resources Board Order No. 2009-0009 as Modified by 2010-0014 DWQ for sites above an acre, registered in SMARTS.

C. Post Construction BMPs for all sites must be documented within construction drawings and through completion of the State Water Board's 'Post-Construction Water Balance Calculator' submitted to UCB EH&S.

D. Contractor shall provide operation and maintenance manuals for post-construction stormwater management controls installed as part of this project. Funding for the operation and maintenance of the BMPs will be identified by the PM, and included in the manuals by the contractor.

E Contractor shall refer to construction drawings for post-construction BMPs and include them in the SWPPP.

F. Develop a maintenance plan for the permanent BMPs installed at the site.

3.23 PERSONNEL TRAINING

A. The Contractor shall train its employees working on the site on the requirements contained in this Section. The Contractor shall document this training in writing. University representatives for the site will request to see the training materials and records at the onset of work.

B. The Contractor shall inform all subcontractors (if any) of the water pollution prevention requirements contained in this specification and include appropriate subcontract provisions to ensure that these requirements are met.

3.24 LIST OF CONTRACTORS DESIGNATED SWPPP CONTACTS AND PHONE NUMBERS

A. Provide a list of employees that will be responsible for writing, implementing and updating the SWPPP.

SECTION 02210
Attachment 1

Procedure for Wastewater Management from UC Berkeley Building Washing and Maintenance Operations

This procedure describes wastewater management for UC Berkeley building washing operations and is to be used in conjunction with all operations where building exterior surface cleaning generates wash-water. Wastewater from washing operations is prohibited from discharge to storm drains because it may contain chloramines, cleaning compounds, or materials dislodged from the building surfaces during cleaning (such as leaded paint). Wastewater may be disposed to landscaped areas or the sanitary sewer on the condition that contaminant concentrations will not harm the landscape or the sewage treatment facility's operations.

Offsite disposal through the Office of Environment, Health & Safety (EH&S) may be necessary if contaminants in the wash-water exceed sewer discharge contaminant limits. If cleaning compounds containing surfactants, detergents or other chemicals are used in the cleaning process and there are sludges or residues that need to be disposed of, contact EH&S, (510) 642-3073, for disposal guidance.

Building Washing Wastewater Management Procedures

Unpainted Buildings

- Construct a containment system to eliminate wash-water discharge to the storm drain.
- Divert wash-water onto landscaping (preferable) or into the sanitary sewer.
- If high pressure water is used (e.g., hydro-blasting to remove spalled concrete) then settle out the solids using a containment tank, or filter out the solids using filter fabric or other solids removal method.

Painted Buildings

- Construct a containment system to eliminate wash-water from draining to the storm drain or the sanitary sewer system.
- Pour, pump or drain the wash-water into a containment tank.
- Use a filter system (e.g., cartridge filters) to remove suspended paint solids. Use settling methods to minimize the amount of solids entering the filter system. This will prevent filter saturation.
- Sample the filtered water before it is discharge to the sanitary sewer. Have the sample analyzed for the 13 priority pollutant metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, zinc) and any other chemicals of concern that could be present to determine whether or not the water is suitable for sanitary sewer discharge. Send a copy of the analytical results to EH&S for disposal method determination.
- If the analytical results exceed the EBMUD discharge limits, consider options for using a finer pore size filter, or dispose of the water through EH&S. EH&S will arrange to ship the water to a properly permitted disposal facility.

Attachment 2

Procedure for Preventing Chlorinated Water from Entering the Storm Drain System Using Sodium Sulfite Tablets

Purpose

These procedures describe how to manually dechlorinate discharges of domestic water using sodium thiosulfate solution prior to release into storm sewer systems or receiving waters in accordance with Regional Water Quality Control Board requirements.

This procedure is limited to domestic water discharges with a chlorine residual of 2 mg/L or less. Dechlorinating superchlorinated water (chlorine residual of 50-200 mg/L) is not addressed in this procedure. Contact EH&S, (510) 642-3073, for guidance on discharging superchlorinated water.

Dechlorination Procedure Overview

Dechlorination of chlorinated water discharges is accomplished by the addition of tablets comprised of 90% sodium sulfite to the discharge flow. For discharges from trenches during main breaks, the tablets are placed inside synthetic mesh fabric pockets sewn together in a grid or line (called a "dechlor mat" or "dechlor strip" respectively). The dechlor mat or strip is laid across the flow path or over the storm drain and either weighted down or nailed to the street to keep it in place.

In all cases, as the discharged water flows over and around the tablets, chemical is released as the water contacts the tablets, reacting with and destroying the chlorination. The key to the success of this procedure requires effective contact between the flow and the tablets. This is accomplished by ensuring the tablets are well-distributed across the flow path. The tablets must be spaced no more than 4" apart for gravity discharges at ambient pressure. For discharges under pressure (such as pumping), the tablets should be spaced as close together as possible without constricting the flow. The various tablet holder designs are fabricated to ensure that this specification is met.

Selection Criteria for Dechlor Mat or Dechlor Strip for Use in Gravity Discharges

This decision is ultimately up to the preferences of the user as long as the tablets are well distributed across the flow path. The mats can cover a larger area so if the discharge flow is large and spread out, mats may be easier to use than multiple strips. Mats are also sized to cover storm drain inlets so if the flow is not well channelized, it may be easier to locate mats over the storm drain(s) the flow is ultimately discharging into rather than laying out strips or mats upstream of this point. Strips are smaller, take up less space in vehicles and multiple strips can be used to cover larger flows so their convenience and flexibility make them the appropriate choice unless some of the conditions described above are encountered.

Dechlorination Equipment

The following equipment is needed for dechlorination when following this procedure:

Dechlor mat (3' x 4') -or-
Dechlor strip (3' x 6") -or-
Diffuser with tablet chamber -or-
Diffuser with mesh tablet holder -and-
Dechlor tablets (45 lb bucket) -and-
DPD Powder-Pop Dispenser -and-

WARNING!

Don't use sodium sulfite with calcium hypochlorite (HTH) or sodium hypochlorite (used to disinfect water distribution system mains or appurtenances). These two chemicals can react when mixed in the presence of water. The reaction can produce heat and both hydrogen and chlorine gas, creating both a potentially toxic and explosive/flammable atmosphere. These chemicals and associated mixing and dispensing equipment must be kept segregated from each other at all times. Should the chemicals become mixed, call EH&S (510) 642-3073.

Procedure 1—Dechlorination For Releases from Trenches During Water Main Breaks

Fill Pockets with Tablets

Put one tablet in each pocket of the dechlor mat or strip. If the pocket contains a partially-used tablet, add another tablet only if there is room.

Place Dechlor Mat or Strip In Flow Path

Place the dechlor mat or strip across (perpendicular to) the flow path downstream of sediment control devices (e.g., pea gravel bags). Nail the mat or strip to the street using street nails (through the grommets in either end of the mat) or weigh the mat or strip down to ensure that it stays in place. If the flow path is more than 4' wide (width of dechlor mat) when using a dechlor mat or 3' wide (width of dechlor strip) when using a dechlor strip or there is more than one flow path (flow is spreading out in more than one direction), use additional mats to ensure all water from the source is crossing a mat. If the flow is deep (more than 1" above the top of the dechlor mat) and/or the flowrate is very high (>300 GPM), a second mat should be placed downstream of the first mat to ensure adequate dechlorination.

Monitor Mat or Strip

Check the dechlor mat periodically to ensure some tablet remains in each pocket and that all flow is crossing at least one mat.

Clean-up

When the discharge is complete, move the dechlor mat(s) or strip(s) to the storm drain(s) where the discharge was entering, placing it on the upstream side of the grate. Hose the flow path to remove any tablet residual, ensuring that the flow enters the storm drain(s) upon which the dechlor mat(s) or strip(s) is installed. If the flow path separates and some flow travels to a different storm drain, a dechlor mat or strip should be installed at that location as well.

Tablet Disposal

Tablets Shelf Life

Tablets have a relatively long shelf life unless exposed to high temperatures (>85°F). At higher temperatures, tablets may crumble. During the summer months, crews may need to place enough tablets for daily use in coolers for storage on trucks at the beginning of each workday. Supply buckets must be kept in a cool storage location.

Powdered Tablet Waste Disposal

As long as tablets are in large enough pieces to be retained within the mesh dechlor, diffuser chamber or diffuser mesh pockets, they can be used for dechlorination per the procedures contained herein. Small amounts of powdery or granular tablet waste from tablet supply buckets or secondary containers should be mixed with water and discharged to the sanitary sewer.

-- END OF SECTION 01352 --

SECTION 01354
HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES FOR CONTAMINATED SITES

PART 1 - GENERAL

1.01 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

INTERNATIONAL SAFETY EQUIPMENT ASSOCIATION (ISEA)

ANSI/ISEA Z358.1	(2009) American National Standard for Emergency Eyewash and Shower Equipment

NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH (NIOSH)

NIOSH 85-115	(1985) Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

10 CFR 20	Standards for Protection Against Radiation
29 CFR 1904	Recording and Reporting Occupational Injuries and Illnesses
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
29 CFR 1926	Safety and Health Regulations for Construction
29 CFR 1926.65	Hazardous Waste Operations and Emergency Response
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

1.02 DESCRIPTION OF WORK

This section requires Contractors to implement practices and procedures for working safely and in compliance with OSHA and California OSHA regulation while performing contaminated soil removal activities at the Richmond Field Station Site.

1.03 SUBMITTALS

Submit the following for approval in accordance with Section 01021 Shop Drawings Product Data and Samples:

Site Safety and Health Plan (SSHP)
Transportation Plan
Work Zones
Exposure Monitoring/Air Sampling Program
Site Control Log
Employee Certificates

1.04 REGULATORY REQUIREMENTS

Comply with OSHA requirements in 29 CFR 1910 and 29 CFR 1926 with work performed under this contract, especially OSHA's Standards 29 CFR 1926.65 and 29 CFR 1910.120 and state specific OSHA requirements of CCR Titled 8 and CCR Titled 22 where applicable. Submit to the Owner's Representative for resolution matters of interpretation of standards before starting work. The most stringent requirements apply where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary.

1.05 PRECONSTRUCTION SAFETY CONFERENCE

Conduct a preconstruction safety conference prior to the start of site activities and after submission of the Contractor's SSHP. The objective of the meeting will be to discuss health and safety concerns related to the impending work, discuss project health and safety organization and expectations, review and answer comments and concerns regarding the SSHP or other health and safety concerns the Contractor may have. Ensure that those individuals responsible for health and safety at the project level are available and attend this meeting.

1.06 SITE SAFETY AND HEALTH PLAN (SSHP)

Develop and implement a Site Safety and Health Plan that addresses all occupational safety and health hazards (traditional construction as well as contaminant-related hazards) associated with cleanup operations. The SSHP is a dynamic document, subject to change as project operations/execution change. The SSHP will require modification to address changing and previously unidentified health and safety conditions. It is the Contractor's responsibility to ensure that the SSHP is updated accordingly. Submit amendments to the SSHP to the Owner's Representative as the SSHP is updated. The SSHP must contain all updates.

The SSHP shall contain at a minimum the following items:

- Background Information
- Phases of Work Anticipated
- Statements of Safety and Health Policy
- Responsibilities and Lines of Authorities
- Subcontractors and Suppliers
- Training
- Safety and Health Inspections
- Accident Reporting
- Plans Required By the Safety Manual
- Layout Plans
- Emergency Response Plans
- Plan for Prevention of Alcohol and Drug Abuse
- Site Sanitation Plan
- Access and Haul Road Plan
- Respiratory Protection Plan
- Health Hazard Control Program
- Hazard Communication Program
- Heat/Cold Stress Monitoring Plan
- Fire Prevention Plan
- Hazardous Energy Control Plan
- Site-Specific Fall Protection Plan
- Excavation/Trenching Plan

The SSHP shall contain a list of completed Job Hazard Analysis (JHA) as an appendix to the SSHP. A job hazard analysis focuses on job tasks as a way to identify hazards before they occur. It focuses on the relationship between the worker, the task, the tools, and the work environment. The JHA shall include the following items for each hazardous task:

- Job Location
- Analyst
- Date
- Task Description
- Hazard Description
- Hazard Controls

A. Acceptance and Modifications

Prior to submittal, the SSHP must be signed and dated by the Safety and Health Manager and the Site Superintendent. Submit for review 30 days prior to the Preconstruction Safety Conference. Deficiencies in the SSHP will be discussed at the preconstruction safety conference, and be revised to correct the deficiencies and resubmitted for acceptance. Onsite work must not begin until the plan has been accepted.

Maintain a copy of the written SSHP onsite. Changes and modifications to must be made with the knowledge and concurrence of the Safety and Health Manager, the Site Superintendent, and the Owner's Representative. Bring to the attention of the Safety and Health Manager, the Site Superintendent, and the Owner's Representative any unforeseen hazard that becomes evident during the performance of the work, through the Site Safety and Health Officer (SSHO) for resolution as soon as possible. In the interim, take necessary action to re-establish and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public, and the environment. Disregard for the provisions of this specification or the accepted SSHP will be cause for stopping work until the matter has been rectified.

B. Availability

Make available the SSHP in accordance with 29 CFR 1910.120, (b)(1)(v), 29 CFR 1926.65, (b)(1)(v), and CCR Title 8.

1.07 SITE DESCRIPTION AND CONTAMINATION CHARACTERIZATION

A. Project/Site Conditions

Refer to the following reports and information for the site description and contamination characterization. They are made part of the bid package:

1. Tetra Tech. 2013. "Site Characterization Report, Proposed Richmond Bay Campus, Research, Education, and Support Area and Groundwater within the Richmond Field Station Site." May 28.

2. Tetra Tech. 2014. "Removal Action Workplan, Richmond Bay Campus, Research, Education, and Support Area and Groundwater within the Former Richmond Field Station Site." July 18.

1.08 TASK SPECIFIC HAZARDS, INITIAL PPE, HAZWOPER MEDICAL SURVEILLANCE AND TRAINING APPLICABILITY

It is the Contractor's responsibility to reevaluate occupational safety and health hazards to determine initial PPE requirements and as the work progresses to adjust the PPE and onsite operations, if necessary, so that the work is performed safely and in compliance with occupational safety and health regulations.

1.09 STAFF ORGANIZATION, QUALIFICATION AND RESPONSIBILITIES

A. Safety and Health Manager

Safety and Health Manager must be an Industrial Hygienist certified by the American Board of Industrial Hygiene or a safety professional certified by the Board of Certified Safety Professionals.

1. Additional Qualifications

The Safety and Health Manager must have the following additional qualifications:

- A minimum of 3years experience in developing and implementing safety and health programs at hazardous waste sites and/or remediation of contaminated sites.
- Documented experience in supervising professional and technician level personnel.
- Documented experience in developing worker exposure assessment programs and air monitoring programs and techniques.
- Documented experience in managing personal protective equipment programs and conducting PPE hazard evaluations for the types of activities and hazards likely to be encountered on the project.
- Working knowledge of state and Federal occupational safety and health regulations.

2. Responsibilities and Duties

The Safety and Health Manager shall:

- Be responsible for the development, implementation, oversight, and enforcement of the SSHP.
- Sign and date the SSHP prior to submittal.
- Conduct initial site-specific training.
- Be available for consultation during the remedial activities and at the startup of each new major phase of work.
- Visit the site as needed and at least once per week for the duration of activities, to audit the effectiveness of the SSHP.
- Be available for emergencies.
- Provide onsite consultation as needed to ensure the SSHP is fully implemented.
- Coordinate any modifications to the SSHP with the Site Superintendent, the SSHO, and the Owner’s Representative.
- Provide continued support for upgrading/downgrading of the level of personal protection.

- Be responsible for evaluating air monitoring data and recommending changes to engineering controls, work practices, and PPE.
- Review accident reports and results of daily inspections.
- Serve as a member of the Contractor's quality control staff.

B. Site Safety and Health Officer

Designate an individual as the Site Safety and Health Officer (SSHO). The name, qualifications (education and training summary and documentation), and include work experience of the Site Safety and Health Officer and alternate in the SSHP.

1. Qualifications

The SSHO shall meet the following qualifications:

- A minimum of 2 years' experience in implementing safety and health programs at hazardous waste sites and/or remediation at contaminated sites where Level C personal protective equipment was required.
- Documented experience in construction techniques and construction safety procedures.
- Working knowledge of Federal and state occupational safety and health regulations.
- Specific training in personal and respiratory protective equipment, confined space entry and in the proper use of air monitoring instruments and air sampling methods including monitoring for ionizing radiation.

2. Responsibilities and Duties

The Site Safety and Health Officer shall:

- Assist and represent the Safety and Health Manager in onsite training and the day to day onsite implementation and enforcement of the accepted SSHP.
- Be assigned to the site on a full time basis for the duration of field activities. The SSHO can have collateral duties in addition to Safety and Health related duties.
- Have authority to ensure site compliance with specified safety and health requirements, Federal, state and OSHA regulations and all aspects of the SSHP including, but not limited to, activity hazard analyses, air monitoring, monitoring for ionizing radiation, use of PPE, decontamination, site control, standard operating procedures used to minimize hazards, safe use of engineering controls, the emergency response plan, confined space entry procedures, spill containment program, and preparation of records by performing a daily safety and health inspection and documenting results on the Daily Safety Inspection Log in accordance with 29 CFR 1904.
- Have authority to stop work if unacceptable health or safety conditions exist, and take necessary action to re-establish and maintain safe working conditions.
- Consult with and coordinate any modifications to the SSHP with the Safety and Health Manager, the Site Superintendent, and the Owner's Representative.
- Serve as a member of the Contractor's quality control staff on matters relating to safety and health.
- Conduct accident investigations and prepare accident reports.

- Conduct daily safety inspection and document safety and health findings into the Daily Safety Inspection Log. Track noted safety and health deficiencies to ensure that they are corrected.
- In coordination with site management and the Safety and Health Manager, recommend corrective actions for identified deficiencies and oversee the corrective actions.

C. Occupational Physician

Utilize the services of a licensed physician, who is certified in occupational medicine by the American Board of Preventative Medicine, or who, by necessary training and experience is Board eligible. The physician must be familiar with this site's hazards and the scope of this project. Include the medical consultant's name, qualifications, and knowledge of the site's conditions and proposed activities in the SSHP. The physician will be responsible for the determination of medical surveillance protocols and for review of examination/test results performed in compliance with 29 CFR 1910.120, (f) and 29 CFR 1926.65, (f), CCR, Title 8, Section 5192 and paragraph MEDICAL SURVEILLANCE.

D. Persons Certified in First Aid and CPR

At least two persons who are currently certified in first aid and CPR by the American Red Cross or other approved agency must be onsite at all times during site operations. They must be trained in universal precautions and the use of PPE as described in the Bloodborne Pathogens Standard of 29 CFR 1910, Section .1030 and CCR, Title 8, Section 5193 These persons may perform other duties but will be immediately available to render first aid when needed.

1.10 TRAINING

Meet the following requirements in the Contractor's training program for workers performing cleanup operations and who will be exposed to contaminants.

A. General Hazardous Waste Operations Training

All Personnel performing duties with potential for exposure to onsite contaminants must meet and maintain the following 29 CFR 1910.120/29 CFR 1926.65 (e) and CCR, Title 8, Section 5192training requirements:

- 40 hours of offsite hazardous waste instruction.
- 3 days actual field experience under the direct supervision of a trained, experienced supervisor.
- 8 hours refresher training annually.

Onsite supervisors must have an additional 8 hours management and supervisor training specified in 29 CFR 1910.120/29 CFR 1926.65 (e) (4) and CCR, Title 8, Section 5192.

The University will provide a 30-minute training to all Personnel performing duties with potential for exposure to onsite contaminants. Any Personnel who does not attend the training must take the on-line “Working at the Richmond Field Station” training prior to conducting work.

B. Pre-entry Briefing

Prior to commencement of onsite field activities, all site employees, including those assigned only to the Support Zone, must attend a site-specific safety and health training session. This session will be conducted by the Safety and Health Manager and the Site Safety and Health Officer to ensure that all

personnel are familiar with requirements and responsibilities for maintaining a safe and healthful work environment. Each employee must sign a training log to acknowledge attendance and understanding of the training. Notify the Owner's Representative at least 5 days prior to the initial site-specific training session so UC Berkeley personnel involved in the project may attend.

C. Periodic Safety Meetings

Conduct periodic onsite safety meetings by the SSHO at least daily for personnel assigned to work at the site during the following day. Address safety and health procedures, work practices, any changes in the SSHP, activity hazard analyses, work tasks, or schedule; results of previous week's air monitoring, review of safety discrepancies and accidents. Convene a meeting prior to implementation of the change must be convened should an operational change affecting onsite field work be made, to explain safety and health procedures. Conduct a site-specific training sessions for new personnel, visitors, and suppliers by the SSHO using the training curriculum outlines developed by the Safety and Health Manager. Each employee must sign a training log to acknowledge attendance and understanding of the training.

1.11 PERSONAL PROTECTIVE EQUIPMENT

A. Site Specific PPE Program

Provide onsite personnel exposed to contaminants with appropriate personal protective equipment. Components of levels of protection (B, C, D and modifications) must be relevant to site-specific conditions, including heat and cold stress potential and safety hazards. Use only respirators approved by NIOSH. Keep protective equipment and clothing clean and well maintained. Include site-specific procedures to determine PPE program effectiveness and for onsite fit-testing of respirators, cleaning, maintenance, inspection, and storage of PPE within the PPE section of the SSHP.

B. Levels of Protection

The Safety and Health Manager must establish and evaluate as the work progresses the levels of protection for each work activity. Also establish action levels for upgrade or downgrade in levels of PPE. Describe in the SSHP the protocols and the communication network for changing the level of protection. Address air monitoring results, potential for exposure, changes in site conditions, work phases, job tasks, weather, temperature extremes, individual medical considerations, etc. within the PPE evaluation protocol.

1. Initial PPE Components

The following items constitute initial minimum protective clothing and equipment ensembles.

Level D	[_____]
Modified Level D	[__**X**__] Hard hat, eye protection, safety-toe work boots, shirts with sleeves and long pants (shorts are not acceptable), hearing protection (as required). Chemical resistant disposable outer coveralls, chemical-resistant gloves taped to outer coveralls.
Level C	[_____]
Level B	[_____]

See section 02 61 13, Excavation and Handling of Contaminated Material for dust control and air monitoring requirements. If the dust levels exceed the visible dust range then the Contractor shall evaluate upgrading the PPE level and/or monitor the worker's breathing zone for particulates and filtered contaminants.

1.12 MEDICAL SURVEILLANCE PROGRAM

Meet 29 CFR 1910.120/29 CFR 1926.65 (f) and CCR, Title 8, Section 5192 for medical surveillance program for workers performing cleanup operations and who will be exposed to contaminants. Assure the Occupational Physician or the physician's designee performs the physical examinations and reviews examination results.

A. Physician's Written Opinion

Obtain and furnish to the Safety and Health Manager; and the employee before work begins, a copy of the physician's written opinion for each employee. Address the employee's ability to perform hazardous waste site remediation work and containing the following:

- The physician's verification of the employee's fitness to perform duties as well as recommended limitations upon the employee's assigned work and/or PPE usage.
- The physician's opinion about increased risk to the employee's health resulting from work; and
- A statement that the employee has been informed and advised about the results of the examination.

B. Employee Certificates

Provided on employee certificates for each worker performing cleanup operations with potential for contaminant-related occupational exposure signed by the safety and health manager and the occupational physician indicating the workers meet the training and medical surveillance requirements of this contract.

1.13 HEAT STRESS MONITORING AND MANAGEMENT

Document in the SSHP and implement the procedures and practices in section 06.J. in EM 385-1-1 to monitor and manage heat stress.

1.14 SPILL AND DISCHARGE CONTROL

Develop and implement written spill and discharge containment/control procedures. Address radioactive wastes, shock sensitive wastes, laboratory waste packs, material handling equipment, as well as drum and container handling, opening, sampling, shipping and transport. Describe prevention measures, such as building berms or dikes; spill control measures and material to be used (e.g., booms, vermiculite); location of the spill control material; personal protective equipment required to cleanup spills; disposal of contaminated material; and who is responsible to report the spill. Storage of contaminated material or hazardous materials must be appropriately bermed, diked and/or contained to prevent any spillage of material on uncontaminated soil. If the spill or discharge is reportable, and/or human health or the environment is threatened, the National Response Center, the state, and the Owner's Representative must be notified as soon as possible.

1.15 HOT WORK

Hot work will not be permitted on or within the tanks or anywhere else not previously specified as a hot work area. Prior to conducting hot work, a hot work permit must be prepared by the person to be conducting the hot work and reviewed and signed off by the Contractor's qualified person. An additional hot work permit may need to be obtained from local authorities or in the case of military or other federal installations, the fire marshal. An example format for a hot work permit must be included in the ASSHP. Describe compliance with the following procedures. After tank interiors have been decontaminated, hot work may be conducted only when the tank is inerted, and to the extent necessary to begin dismantling the tanks. After decontamination of tank interiors, hot work must not be performed unless monitoring indicates atmospheres within and immediately surrounding the tanks are less than 8 percent oxygen inside the tank and less than 10 percent of the LFL outside the tank; continuous monitoring must continue until the hot work is completed. The hot work prohibition includes welding, cutting, grinding, sawing, or other similar operations which could be expected to potentially generate combustion-producing temperatures or sparks, or which could produce potentially hazardous fumes or vapors. Designate an individual at each hot work site as a fire watch. This person's sole responsibility is to monitor the hot work and have immediate access to the fire extinguisher located at each hot work site. A new permit must be obtained at the start of each work shift during which hot work will be conducted.

1.16 SITE CONTROL MEASURES

A. Work Zones

Initial anticipated work zone boundaries (exclusion zone, contamination reduction zone, support zone, all access points and decontamination areas) are to be clearly delineated on the site drawings. Base delineation of work zone boundaries on the contamination characterization data and the hazard/risk analysis to be performed as described in paragraph: HAZARD/RISK ANALYSIS. As work progresses and field conditions are monitored, work zone boundaries may be modified (and site drawings modified) with approval of the Owner’s Representative. Clearly identify work zones and marked in the field (using fences, tape, signs, etc.). Submit and post a site map, showing work zone boundaries and locations of decontamination facilities in the onsite office. Work zones must consist of the following:

1. Exclusion Zone (EZ)

The exclusion zone is the area where hazardous contamination is either known or expected to occur and the greatest potential for exposure exists. Control entry into this area and exit may only be made through the Decontamination Zone.

2. Decontamination Zone

The Decontamination Zone is the transition area between the Exclusion Zone and the Support Zone. The personnel and equipment decontamination areas must be separate and unique areas located in the Decontamination Zone.

3. Support Zone (SZ)

The Support Zone is defined as areas of the site, other than exclusion zones and contamination reduction zones, where workers do not have the potential to be exposed to hazardous substances or dangerous conditions resulting from hazardous waste operations. Secure the Support Zone against

active or passive contamination. Site offices, parking areas, and other support facilities must be located in the Support Zone.

B. Site Control Log

A log of personnel visiting, entering, or working on the site must be maintained. Include the following: date, name, agency or company, time entering and exiting site, time entering and exiting the exclusion zone (if applicable). Before visitors are allowed to enter the Contamination Reduction Zone or Exclusion Zone, they must show proof of current training, medical surveillance and respirator fit testing (if respirators are required for the tasks to be performed) and fill out a Certificate of Worker or Visitor Acknowledgment. Record this visitor information, including date, in the log.

C. Communication

Provide and install an employee alarm system that has adequate means of on and off site communication in accordance with 29 CFR 1910 Section .165 and CCR, Title 8, Section 5192.

The means of communication must be able to be perceived above ambient noise or light levels by employees in the affected portions of the workplace.

The signals must be distinctive and recognizable as messages to evacuate or to perform critical operations.

D. Site Security

Provide the following site security: Print signs in bold large letters on contrasting backgrounds. Signs must be visible from all points where entry might occur and at such distances from the restricted area that employees may read the signs and take necessary protective steps before entering.

1.17 PERSONAL HYGIENE AND DECONTAMINATION

Personnel entering the Exclusion or Contamination Reduction Zones or otherwise exposed to hazardous chemical vapors, gases, liquids, or contaminated solids must decontaminate themselves and their equipment prior to exiting the contamination reduction zone (Decontamination Zone) and entering the support zone. Consult Chapter 10.0 of NIOSH 85-115 when preparing decontamination procedures. Submit a detailed discussion of personal hygiene and decontamination facilities and procedures to be followed by site workers as part of the SSHP. Train employees in the procedures and enforce the procedures throughout site operations.

A. Decontamination Facilities

Submit drawings showing the layout of the personnel and equipment decontamination areas.

B. Personnel Decontamination

Initially set up a decontamination line in the Decontamination Zone. Employees must exit the exclusion zone through the Decontamination Zone and implement the following decontamination procedures and techniques as necessary and specified in the SSHP: [Scrub and rinse water proof outer garments] [remove all outer garments] [hand and face wash] [shower].

Showers, if needed, must comply with 29 CFR 1910, Section.141 and CCR, Title 8, Section 5162. It is the Site Safety and Health Officer's responsibility to recommend techniques to improve personnel decontamination procedures, if necessary.

C. Equipment Decontamination

Decontaminate the vehicles and equipment used in the EZ shall be decontaminated in the Decontamination Zone prior to leaving the site.

1. Facilities for Equipment and Personnel

Provide a vehicle/equipment decontamination station within the Decontamination Zone for decontaminating vehicles and equipment leaving the EZ. At a minimum Dry decontamination shall be used with a broom to remove dry/loose spilled materials on accessible surfaces. A designated "clean area" shall be designated in the Decontamination Zone for performing equipment maintenance. Use this area when personnel are required by normal practices to come in contact with the ground, i.e., crawling under a vehicle to change engine oil. Equipment within the EZ or Decontamination Zone must be decontaminated before maintenance is performed.

2. Procedures

Procedures for equipment decontamination must be developed and utilized to prevent the spread of contamination into the SZ and offsite areas. These procedures must address disposal of contaminated products and spent materials used on the site, including containers, fluids, oils, etc.

Assume any item taken into an EZ to be contaminated and perform an inspection and decontaminate. Vehicles, equipment, and materials must be cleaned and decontaminated prior to leaving the EZ and site. Handle construction material in such a way as to minimize the potential for contaminants being spread and/or carried offsite. Prior to exiting the site, vehicles and equipment must be monitored to ensure the adequacy of decontamination.

1.18 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

Maintain, as a minimum, the following items onsite and available for immediate use:

- First aid equipment and supplies approved by the consulting physician.
- Emergency eyewashes and showers that comply with ANSI/ISEA Z358.1.
- Provide fire extinguishers of sufficient size and type at site facilities and in all vehicles and at any other site locations where flammable or combustible materials present a fire risk.

1.19 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

An Emergency Response Plan, that meets the requirements of 29 CFR 1910.120 (l), 29 CFR 1926.65 (l), and CCR, Title 8, Section 3221 must be developed and implemented as a section of the SSHP. In the event of any emergency associated with remedial action, without delay, alert all onsite employees and as necessary offsite emergency responders that there is an emergency situation; take action to remove or otherwise minimize the cause of the emergency; alert the Owner’s Representative; and institute measures necessary to prevent repetition of the conditions or actions leading to, or resulting in, the emergency. Train employees that are required to respond to hazardous emergency situations to their level of responsibility according to 29 CFR 1910.120 (q), and 29 CFR 1926.65 (q), and CCR, Title 8, Section

5192 requirements. Rehearse the plan regularly as part of the overall training program for site operations. Review the plan periodically and revised as necessary to reflect new or changing site conditions or information. Provide copies of the Emergency Response Portion of the accepted SSHP to the affected local emergency response agencies. Address, as a minimum, the following elements in the plan:

- Pre-emergency planning. Coordinate with local emergency response providers during preparation of the Emergency Response Plan. At a minimum, coordinate with local fire, rescue, hazardous materials response teams, police and emergency medical providers to assure all organizations are capable and willing to respond to and provide services for on-site emergencies. Ensure the Emergency Response Plan for the site is compatible and integrated with the local fire, rescue, medical and police security services available from local emergency response planning agencies.
- Personnel roles, lines of authority, communications for emergencies.
- Emergency recognition and prevention.
- Site topography, layout, and prevailing weather conditions.
- Criteria and procedures for site evacuation (emergency alerting procedures, employee alarm system, emergency PPE and equipment, safe distances, places of refuge, evacuation routes, site security and control).
- Specific procedures for decontamination and medical treatment of injured personnel.
- Route maps to nearest medical facility. Site-support vehicles must be equipped with maps. At the beginning of project operations, drivers of the support vehicles must become familiar with the emergency route and the travel time required.
- Emergency alerting and response procedures including posted instructions and a list of names and telephone numbers of emergency contacts (physician, nearby medical facility, fire and police departments, ambulance service, Federal, state, and local environmental agencies; as well as Safety and Health Manager, the Site Superintendent, the Owner's Representative and/or their alternates).
- Procedures for reporting incidents to appropriate government agencies. In the event that an incident such as an explosion or fire, or a spill or release of toxic materials occurs during the course of the project, the appropriate government agencies must be immediately notified. In addition, verbally notify the Owner's Representative and the RFS Site Manager immediately and receive a written notification within 24 hours. Include within the report the following items:

  (1) Name, organization, telephone number, and location of the Contractor.

  (2) Name and title of the person(s) reporting.

  (3) Date and time of the incident.

  (4) Location of the incident, i.e., site location, facility name.

  (5) Brief summary of the incident giving pertinent details including type of operation ongoing at the time of the incident.

  (6) Cause of the incident, if known.

  (7) Casualties (fatalities, disabling injuries).

  (8) Details of any existing chemical hazard or contamination.

Add:
All fires and explosions shall be immediately reported to UCPD and the CFM. Call (510) 642-3333.

The contractor shall not disturb the site of the fire or explosion until the CFM has arrived and instructs the contractor accordingly.

(9) Estimated property damage, if applicable.

(10) Nature of damage, effect on contract schedule.

(11) Action taken to ensure safety and security.

(12) Other damage or injuries sustained, public or private.

- Procedures for critique of emergency responses and follow-up.

1.20 CERTIFICATE OF WORKER/VISITOR ACKNOWLEDGEMENT

A copy of a Contractor-generated certificate of worker/visitor acknowledgement must be completed and submitted for each visitor allowed to enter contamination reduction or exclusion zones, and for each employee.

1.21 INSPECTIONS

Attach to and submit with the Daily Quality Control reports the SSHO's Daily Inspection Logs. Include with each entry the following: date, work area checked, employees present in work area, PPE and work equipment being used in each area, special safety and health issues and notes, and signature of preparer.

1.22 SAFETY AND HEALTH PHASE-OUT REPORT

Submit a Safety and Health Phase-Out Report in conjunction with the project close out report and will be received prior to final acceptance of the work. Include the following minimum information:

- Summary of the overall performance of safety and health (accidents or incidents including near misses, unusual events, lessons learned, etc.).
- Final decontamination documentation including procedures and techniques used to decontaminate equipment, vehicles, and on site facilities.
- Summary of exposure monitoring and air sampling accomplished during the project.
- Signatures of Safety and Health Manager and SSHO.

PART 3 - PRODUCTS

Not Used

PART 4 - EXECUTION

Not Used

-- END OF SECTION 01354 --

SECTION 01505
TREE PROTECTION

PART 1 - GENERAL

1.01 SUMMARY

A. Contractor to protect and insure welfare of all existing trees, shrubs and groundcover indicated on the Drawings to remain at all adjacent areas used for access to construction site. Contractor to furnish and supply all equipment and personnel necessary for continued protection of tree and planting areas. Scope to include pruning, protection from physical damage and disease, and irrigation during site work and construction.

1.02 DEFINITIONS

A. "Injury" is defined, without limitation, as any bruising, scarring, tearing, or breaking of roots, branches, or trunk.

B. "Root zone" is defined as the greater of 5 times the diameter of the trunk as a radius or the outermost limits of the tree canopy.

C. "Landscape Architect (LA)" is a licensed Landscape Architect or a representative as designated by the LA.

D. "Arborist" is The Owner's certified arborist

1.03 QUALITY ASSURANCE

A. General Responsibility: The Contractor shall be directly responsible for protection and welfare of existing trees, shrubs and groundcover within and around the Contract Limits which are noted to remain. This responsibility shall continue throughout the full construction period until the entire Project is completed and accepted by the Owner and through completion of the guarantee period and shall include but not be limited to providing all barricades as required and providing protection from mechanical damage, soil compaction, pollution from all sources, and disruption of environmental support which would result in the loss of vigor of said plantings. Contractor shall not take any action foreseeably leading to the death of a tree or permanent damage to its health, including but not limited to excessive pruning, cutting, girdling, poisoning, over watering, unauthorized relocation or transportation of a tree, or machine trenching, excavating, altering the grade, or paving within the root zone of a tree. Exceptions deemed necessary shall be done under the guidance and review of a licensed arborist and with approval from Owner's Representative.

B. Qualifications of Workmen: Trimming shall be performed only by a licensed arborist. Not more than 1/3 of the foliage of a tree shall be removed in a 12-month period. Provide at least one person approved by the Owner who shall be present at all times during tree protection and trimming operations, who shall be thoroughly familiar with the type of work involved, and who shall direct all protection and trimming work.

C. Reference Standards: Published specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to work of this Section.

1. International Society of Arboriculture (ISA) "Guide for Establishing Values of Trees and Other Plants", prepared by the Council of Tree and Landscape Appraisers (CTLA).

2. "Cabling, Bracing and Guying Standards for Shade Trees", as published by the National Arborist Association (NAA), 174 RT 101, Bedford, New Hampshire, 03102.

1.04 JOB CONDITIONS AND CONSTRUCTION REQUIREMENTS

A. Prior to performing any work of this Contract, Contractor shall call for a site meeting with the Owner's Representative and UCB's Arborist. This meeting shall occur prior to construction of any nature on site. The Purpose of the meeting shall be to establish the conditions and methods for preserving all existing trees and the plant materials to be saved. The site shall be photographed to document the condition of the project area and surrounding site, including laydown area and trailer area, to document existing landscape plantings and irrigation systems. These photographs shall become the basis for future evaluation should damage occur to the landscape planting and irrigation system during the construction. An arborist report shall also be done and be on file prior to construction.

B. Sequencing Schedule: Coordinate and cooperate with other trades to enable the work to proceed as rapidly and efficiently as possible. Protective fencing shall be in place before any other work is begun on site, including materials delivery and storage.

1.05 WARRANTY

A. Contractor shall warrant that all trees, shrubs and groundcover covered by the provisions of this Section will be healthy and in flourishing condition of active growth 1 year from the date of Substantial Completion for shrubs and groundcover and 2 years for trees. Where there has been evidence of neglect or violation of tree protection, the warranty shall extend for 5 years.

B. During the warranty period the Contractor shall be liable for damages to all trees covered by the provisions of this Section and shall pay compensation to the Owner. If a tree to remain is destroyed, or damaged so that in the judgment of the Owner's Representative or the Owner it should be replaced, it shall be removed at Contractor's expense and shall closely match size, color, and variety of damaged plantings. If replacement plant materials are not available or desired by the Owner, liquidated damages will be assessed at the value of the tree as determined by ISA formula.

C. Shrubs and groundcover shall be replaced in kind and shall match sizes removed or otherwise agreed upon by the LA.

D. Contractor will not be held responsible for failures due to neglect by the Owner, vandalism, etc., during the warranty period only if such conditions are reported immediately to the Landscape Architect and the damage is documented.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All trees to be preserved shall be protected with a semi-permanent orange construction fencing or chain link fence with limited access for tree maintenance or necessary construction activities. The fences shall enclose the entire area under the root zone of the trees. The fences shall be erected before construction begins and remain in place until final inspection of the construction project except for work specifically required in the approved plans to be done under the trees to be protected. This detail shall appear on a site logistics and access plan to be approved by the Owner prior to commencing construction. If the trees are in a small tree well and cannot be staked, the tree trunk must be wrapped with orange plastic fencing 2-inches thick from the ground to the first branch with 2-inch thick wooden slats and bound securely with additional orange plastic fencing. These items shall not be allowed to dig into the bark. While this protects the trunk, caution must be used not to damage any branches. Major scaffold limbs may require the same treatment as the above or as directed by UCB's Arborist.

B. Water: Provide ample water supply of potable quality and sufficient quantity for all operations required under this Section.

PART 3 - SUBMITTALS

3.01 SUBMITTALS

A. Shop drawings: Construction details for protective barriers and barricades as required.

B. Schedule: Watering schedule, where interruption of irrigation systems will exceed one watering period.

C. Tree Protection and Demolition Plan: Plan showing all trees over 3-inch in caliper existing on site and significant shrubs, with indications of which are to be removed and which are to remain as part of the future permanent landscape. Tree protection fencing to be included on this and construction logistics plan. This sheet to be included in field set of drawings, to be on site for reference at all times during construction.

PART 4 - EXECUTION

4.01 TREE PROTECTION FENCING

A. Install tree protection fencing around trees to be preserved at a 5x trunk diameter distance from the base of the trunk or drip line, whichever is greater. Fencing shall remain in place until removal is authorized by the Owner's Representative or UCB's Arborist.

B. During the course of construction, if relocation of the fence is required to facilitate construction, the Contractor shall do so only under direction of Owner's Representative or UCB's Arborist, at no additional expense to the Owner.

4.02 PROTECTION OF TREES AND SHRUBS

A. During the course of construction the Contractor shall take all necessary precautions, as outlined herein, to protect from stress, injury or death all existing trees, shrubs and groundcovers to be preserved. Protection shall be given to the roots, trunk, and foliage of all existing plant materials to remain.

B. Trees, subject to the provisions of this Section, which have been injured, shall be repaired immediately by an approved, certified arborist. Repair shall include but not be limited to removal of rough edges and sprung bark, severely injured branches and aeration of the root zone of trees where compaction has occurred as directed by UCB's Arborist. All costs associated with mitigation of damage to trees to be paid by contractor.

C. Tree protection fencing for trees to remain shall be installed prior to beginning any site work. No construction, demolition, equipment access, or work of any nature will be allowed within the fenced area without prior written approval by the Landscape Architect.

1. Approval by UCB's Arborist for work within the fenced area shall not release the Contractor from any of the provisions specified herein for the protection of existing trees to be preserved.

2. During the course of construction of approved work within the fenced area, no roots larger than two inch in diameter shall be cut without prior written approval by the Landscape Architect/Arborist.

D. During construction the existing site surface drainage patterns shall not be altered within the area of the root zone.

E. Contractor shall not alter the existing water table within area of root zone.

F. Take necessary measures, to maintain healthy living conditions for existing trees, shrubs and groundcover to be preserved. Such measures shall include but not be limited to periodic washing of leaves for the removal of dust, soil aeration and supplemental or interim irrigation.

G. Where traffic is necessary and approved by the Owner, the root zone shall be tested for compaction and corrective measures shall be taken following necessary construction activities. Two to three inches of mulch shall be laid down prior to traffic to reduce potential compaction.

H. Do not permit the following within root zone of any existing tree to be preserved, or on existing or groundcover areas.

1. Storage or parking of automobiles or other vehicles.

2. Stockpiling of building materials, soils, or refuse of excavated materials.

3. Skinning or bruising of bark.

4. Use of trees as support posts, power poles, or signposts; anchorage for ropes, guy wires, or power lines; or other similar functions.

5. Dumping of poisonous materials on or around trees and roots. Such materials include but are not limited to paint, petroleum products, dirty water, or other deleterious materials.

6. Cutting of tree roots by utility trenching, foundation digging, placement of curbs and trenches, and other miscellaneous excavation without prior written approval by Landscape Architect.

7. Damage to trunk, limbs, or foliage caused by maneuvering vehicles or stacking material or equipment too close to the tree.

8. Compaction of shrub areas or tree root zone by excessive foot traffic, movement of trucks or grading machines; storage of equipment, gravel, earth fill, or construction supplies; etc.

9. Excessive water or heat from equipment, utility line construction, or burning of trash under or near bushes or trees.

10. Damage to root system from flooding, erosion, puddling or continuous running water, and excessive wetting and drying resulting from dewatering and other operations.

11. "Excessive pruning", removal of more than one-third (1/3) of the foliage of a tree in any twelve (12) month period.

I. Excavation Around Trees and Shrubs:

1. Excavation within root zone of trees shall be done only where absolutely necessary.

2. Where trenching for utilities is required within root zone, tunneling under and around roots shall be by hand digging. Main lateral roots and taproots shall not be cut. Smaller roots that interfere with installation of new work may be cut with prior approval.

3. Where excavation for new construction is required within root zone of trees, hand excavation shall be employed to minimize damage to root system. Existing grade of tree at its crown shall be marked with non-toxic paint before construction begins. Roots shall be relocated in backfill areas wherever possible. If 3" or larger roots are encountered, they shall be exposed beyond excavation limits as required to bend and relocate without breaking. If encountered immediately adjacent to location of new construction and relocation is not practical, roots shall be hand pruned under direction and approval of a Certified Arborist, 6" back from new construction and treated as exposed roots.

4. Exposed, cut or broken roots shall not be allowed to dry out before permanent backfill is placed. Temporary earth cover shall be provided, or roots shall be packed with wet peat moss or four layers of wet, untreated burlap and temporarily supported and protected from damage until permanently relocated and covered with backfill. The cover over the roots shall be wetted to the point of runoff daily.

5. Branching structure shall be thinned in accordance with NAA "Pruning Standards and Practices" to balance loss to root system caused by damage or cutting of root system. Thinning shall not exceed 30 percent of existing branching structure.

4.03 NOT USED

4.04 TRIMMING OF TREES – NOT USED

4.05 REPAIR COMPENSATION

A. Damage to existing tree crowns or roots over 2 inches in diameter shall be immediately reported to the Owner's Representative and UCB's Arborist in writing, and at the direction of the UCB's Arborist, repaired immediately at the Contractor's expense by an approved, certified arborist.

B. The UCB's Arborist shall direct repair of trees damaged by construction operations. Repairs shall be made promptly after damage occurs to prevent progressive deterioration of damaged trees.

1. Any tree to remain which is damaged or destroyed owing to the Contractor's negligence or failure to provide adequate protection shall be compensated for dependent on its caliper and in accordance with the schedule of values most current to ISA guidelines, but not less than:

7 inches	$3,000
8 inches	$3,500
9 inches	$4,000
10 inches	$5,000
11 inches	$6,000
12 inches	$8,000
13 inches	$9,000
14 inches	$10,000
15 inches	$11,000
16 inches	$12,000
17 inches	$13,000

18 inches and over add $2,000 for each caliper inch

C. Damaged tree limbs or trees which have died as a result of injury during construction shall remain the property of the Owner and shall remain or be removed by the Contractor as directed by the Owner.

4.06 MAINTENANCE

A. During construction: Contractor to monitor and perform maintenance activities as required by LA or Arborist to ensure that all trees and shrubs to remain are not negatively impacted by construction procedures, throughout the duration of the construction project. This may include, but not be limited to deep watering and or installation of temporary irrigation. Quantities of water to be applied and lengths of time are variable and shall depend upon seasonal rainfall. Throughout the duration of the project, as deemed necessary by the UCB's Arborist, tree leaves/needles shall be washed down with a hose and water or other means necessary to remove accumulated construction dirt and residues.

B. Maintenance period of 1 year after final acceptance shall apply to shrubs and a minimum of 2 years to trees, as determined by LA. Contractor shall initiate quarterly inspections by a Certified Arborist of existing trees to be preserved and submit written proposals to the Architect and Landscape Architect for additional maintenance work as may be required to ensure the health and general well-being of the trees. Contractor shall retain, at the direction of the UCB's Arborist additional specialists as may be required to perform this work.

4.07 CLEAN-UP

A. At close of construction in each area, remove all protective barriers and any accumulated debris at the direction of the Owner's Representative. Transport all barrier materials off site at no additional expense to Owner.

B. Repair all grades and areas of soil compaction, and restore all damaged plant materials.

-- END OF SECTION 01505 --

SECTION 01540
CONSTRUCTION AND DEMOLITION WASTE MANAGEMENT

PART 1 - GENERAL

1.01 REQUIREMENTS OF THIS SECTION

A. Waste Management Goals

B. Waste Management Plan

C. Progress Report

D. Project Meetings

1.02 RELATED SECTIONS

A. Section 01010: Summary of Work

B. Section 01016: Hazardous Materials

C. Section 01024: Clean-Up and Disposal

1.03 DEFINITIONS

A. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk or similar products.

B. Construction and Demolition Waste: Solid wastes typically including building materials, packaging, trash debris and rubble resulting from construction, remodeling repair and demolition operations. Hazardous materials are not included.

C. Diversion from Landfill: To remove, or have removed, from the site for recycling, reuse or salvage material that might otherwise be sent to a landfill. Diversion from Landfill does not include using the material as alternative daily cover at a landfill site, nor does it include burning, incinerating, transformation processing or thermally destroying waste.

D. Recyclable: The ability of a product or material to be recovered at the end of its life cycle and remanufactured into a new product.

E. Recycle (Recycling): To sort, separate, process, treat or reconstitute solid waste and other discarded materials for the purpose of redirecting such materials into the manufacture of useful products. Recycling does not include burning, incinerating, transforming or thermally destroying waste.

F. Return: To give back reusable items or unused products to vendors.

G. Reuse: To reuse excess of discarded construction material in some manner on the Project site.

H. Salvage: To remove a waste material from the Project site for resale or reuse.

I. Waste: Extra material or material that has reached the end of its useful life in its intended use. Waste includes salvageable, returnable, recyclable and reusable material.

J. Waste Management Plan: A project-related plan for the collection, transportation and disposal of waste generated at the construction site. The purpose of the plan is to ultimately reduce the amount of material going to landfill.

1.04 WASTE MANAGEMENT REQUIREMENTS

A. All projects shall generate the least amount of waste possible and the process shall ensure the generation of as little waste as possible due to error, inaccurate planning, breakage, mishandling, contamination, or other factors.

B. Of the inevitable waste that is generated, as many of the waste materials as feasible, and as stated here, shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

C. A minimum of 50% of total project demolition and construction waste (by weight) shall be diverted from the landfill and projects shall attempt to divert 75%. Volume reporting is only permitted by exception. The following waste categories are likely candidates to be included in the diversion plan.

1. Inerts (and clearing debris, rock and dirt)
2. Concrete
3. Bricks
4. Concrete masonry units (CMU)
5. Asphalt
6. Metals (e.g. banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized, stainless steel, aluminum, copper, zinc, brass, bronze)
7. Cardboard, packaging
8. Clean dimensional wood
9. Asphalt shingles or roofing
10. Drywall
11. Carpet and pad
12. Ceiling tiles
13. Glass
14. Shrink/stretch wrap from furniture/palletized deliveries
15. Greenwaste and organic landscaping materials (brush, chips, trees, stumps)

16. Reuse items indicated on the Drawings and/or elsewhere in the Specification

D. All fluorescent lamps, HID lamps and mercury-containing thermostats removed from the site shall be recycled and disposed of through the campus procedures. See http://ehs.berkeley.edu/how-do-i-dispose-waste

1.05 SUBMITTALS

A. The General Contractor shall be responsible for the development and implementation of a Waste Management Plan for the Project. The Plan must be approved by the Owner's Representative.

B. Waste Management Plan: Before any work begins, the General Contractor shall submit to the Owner's Representative Waste Management Plan containing the following:

1. Estimate of the total proposed jobsite waste to be generated, including types and quantities (by weight).

2. Proposed alternatives to landfilling: A list of each material proposed to be salvaged, reused, or recycled during the course of the Project, the proposed destination for each material and the projected amount (by weight).

3. Material handling procedures: A description of the means by which any waste materials identified in item (b) above will be protected from contamination, and a description of the means to be employed in recycling the above materials consistent with the requirements for acceptance by recycling processors to be utilized.

4. List of documentation to be provided in Progress Reports.

1.06 PROGRESS REPORTS

A. The General Contractor shall submit Waste Management Progress Report(s) at a regular time interval specified by the Owner's Representative. The Progress Report shall contain the following information:

1. Project title, name of company completing report, and dates of period covered by the report.

2. Report on the disposal of all jobsite waste, including:

a. Recycled materials. For each material, provide the following:

1) Amount (in tons)

2) Dates removed from the jobsite

3) Receiving Party

b. Reused or salvaged materials. For each material, provide the following:

1) Amount (in tons)

2) Description of intended or actual use

c. Landfilled materials: Provide the following:

1) Amount (in tons)

2) Dates removed from the jobsite

3) Identity of the transfer station or landfill

3. Include legible copies of on-site logs, weight tickets and receipts. Receipts shall be from recycling and/or disposal site operators who can legally accept the materials for the purpose of reuse, recycling or disposal. If mixed construction and demolition waste is sorted off-site, provide a letter from the processor stating the average percentage of mixed C&D waste they recycle. Contractor shall save original documents and provide certified weight tags for the duration of the contract.

4. This plan and all reports will be submitted to the solid waste/recycling manager on campus, for inclusion in campus waste generation and diversion reports.

1.07 PROJECT MEETINGS

A. Waste management plans and implementation shall be discussed at the following meetings:

1. Pre-demolition meeting

2. Pre-construction meeting

3. Regular job-site meetings

1.08 SUMMARY

A. This section applies to all UC Berkeley projects. The information and activities required in this section will meet UC Berkeley Green Building Requirements and USGBC Leadership in Energy and Environmental Design (LEED) for the Construction Waste Management (LEED NC v2.2 MR Credit 2.1 and MR 2.2 and LEED- CI v2.0 credit MR 2.1 and MR 2.2). See **https://www.ocf.berkeley.edu/~recycle/** for campus recycling resource information.

-- END OF SECTION 01540 --

SECTION 01760
ALTERNATES

PART 1 – GENERAL

1.01 WORK INCLUDED

A. This section identifies each Alternate and describes basic changes to the Work only when that Alternate is made a part of the Work by specific provision in the Agreement.

B. The Lump Sum Base Bid and Alternates shall include the costs of all supporting elements required, so that the combination of the Lump Sum Base Bid and any Alternates shall be complete. The scope of Work for all Alternates shall be in accordance with applicable Drawings and Specifications.

C. Except as otherwise specifically provided by Owner, the Work described in Alternates shall be completed with no increase in Contract Time.

D. This section includes only the non-technical descriptions of the Alternates. Refer to the specific sections of Divisions 2 - 16 of the Specifications for technical descriptions of the Alternates.

E. Coordinate related Work and modify surrounding Work as required to properly and completely integrate the Alternates into the Work.

F. The Lump Sum Base Bid shall include all work shown except work described as Alternates.

G. The Alternates described below are intended to:

1. Allow the Owner to identify the cost of a portion of the work for funding purposes, and
2. Provide the Owner flexibility to adjust the project scope to suit funds available.

H. The Owner reserves the right to award none, any one or more selected in any order, or all of the Alternates in combination with the work covered by the Lump Sum Base Bid. Alternates will not be awarded without awarding the Lump Sum Base Bid.

I. The Owner reserves the right to determine the low bid as the Lump Sum Base Bid alone or the sum of the Lump Sum Base Bid and any combination of Alternates it chooses to award. The bid documents will identify the evaluation method to be used for choosing the alternates for purposes of identifying the low bid.

J. Each Alternate is intended to cover all of the work required for a complete finished job.

K. All Alternates are either "additive" or "deductive" or “No Change” (as appropriate) to the Lump Sum Base Bid. The amounts shall be quoted in the appropriate spaces provided on the form for the Bid for Lump Sum Contracts.

L. Failure to either quote an amount; select the “No Change” option or the insertion of the words "no bid," "none" or words of similar import, will be considered as not completing the Bid for Lump Sum Contract and may constitute disqualification of the entire bid at Owner's discretion.

M. The Base Bid and the Alternates are exclusive in their scope of work. There is no overlap between or among the Base Bid and Alternates. The cost of any item of work shall be included only once, in the Base Bid or in the Alternates.

1.02 DESCRIPTION OF ALTERNATES

A. ALTERNATE 1: Excavation and backfill for PCB contaminated soil at Building 150.

-- END OF SECTION 01760 --

SECTION 026113
EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL

PART 1 - GENERAL

1.01 MEASUREMENT AND PAYMENT

A. Measurement

Measurement for excavation and onsite transportation shall be based on the actual number of cubic yards of contaminated material in-place prior to excavation. Determination of the volume of contaminated material excavated shall be based on cross-sectional volume determination reflecting the differential between the original elevations of the top of the contaminated material and the final elevations after removal of the contaminated material. Measurement for backfilling of excavated areas shall be based on in-place cubic yards of compacted fill.

B. Payment

1. Excavation and Transportation

Compensation for excavation and onsite transportation of contaminated material will be paid as a unit cost. This unit cost shall include any other items incidental to excavation and handling not defined as having a specific unit cost.

2. Backfilling

Compensation for backfill soil, transportation of backfill, backfill soil conditioning, backfilling, and compaction will be paid as a single unit cost.

3. Stockpiling

Compensation for construction of stockpile areas will be paid for as a unit cost. This unit cost shall include all aspects of grading, preparation, handling, placement, maintenance, removal, treatment, and disposal of stockpile cover materials and liner materials and all other items incidental to construction of stockpiles.

1.02 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM INTERNATIONAL (ASTM)

ASTM D1557	(2012) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3) (2700 kN-m/m3)
ASTM D2167	(2008) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2487	(2011) Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D422	(1963; R 2007; E 2014) Particle-Size Analysis of Soils
ASTM D5434	(2012) Field Logging of Subsurface Explorations of Soil and Rock
ASTM D698	(2012; E 2014) Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/cu. ft. (600 kN-m/cu. m.))

CODE OF FEDERAL REGULATIONS

29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 302	Designation, Reportable Quantities, and Notification

CALIFORNIA CODE OF REGULATIONS

8 CCR Subchapter 4 Article 6	Construction Safety Orders - Excavations

1.03 DESCRIPTION OF WORK

The work consists of excavation and temporary storage of approximately 46 cubic yards of contaminated material. Approximate locations of contaminated material are shown on the drawings. Characterization data on the nature and extent of the contaminated material is shown in the *Final Removal Action Work Plan*, Tetra Tech, Inc. 2014 July provided in Appendix A. The Final RAW (Tetra Tech 2014) identifies the impacted areas within the Corporation Yard and the area associated with Building 150 which served as the basis of these specifications and design. The Final RAW (Tetra Tech 2014) contains the chemical data for these areas from the site investigations. In general the contaminants in the soil consist of polychlorinated biphenyls (PCB), dioxins, metals, and poly aromatic hydrocarbons (PAH). The soil type is silty clay. The top 6 inches consists of a gravel base and there is generally a hardpan clay layer located between 1 to 2 feet below grade surface. There may be cinder in the excavations, which are characterized by a purple color and contain elevated metals. Soil boring logs from hollow stem drilling are located in Appendix A. Submit a Work Plan as specified below. Notify the Owner's Representative within 24 hours, and before excavation, if contaminated material is discovered that has not been previously identified or if other discrepancies between data provided and actual field conditions are discovered. Backfill material is available onsite and typically consists of sandy silt with some clay. Ground water is approximately 5 feet below pre-excavation ground surface.

The Contractor shall manage the soils to prevent dust, spills to the ground or water, transport into storm drains and exposure to people of the environment.

A. Scheduling

Notify the Owner's Representative 14 calendar days prior to the start of excavation of contaminated material. The Contractor shall be responsible for contacting regulatory agencies in accordance with the applicable reporting requirements. DTSC will be notified at least 14 days in advance of field work.

B. Work Plan

Submit a Work Plan within 30 calendar days after notice to proceed. No work at the site, with the exception of site inspections and surveys, shall be performed until the Work Plan is approved. Allow 30 calendar days in the schedule for the U.C. Berkeley's review. No adjustment for time or money will be

made if resubmittals of the Work Plan are required due to deficiencies in the plan. At a minimum, the Work Plan shall include:

- Schedule of activities.
- Method of excavation and equipment to be used.
- Shoring or side-wall slopes proposed.
- Dewatering plan.
- Storage methods and locations for liquid and solid contaminated material.
- Borrow sources and haul routes.
- Decontamination procedures.
- Spill contingency plan.
- Transportation plan.

C. Other Submittal Requirements

Submit separate cross-sections of each area before and after excavation and after backfilling, and test results within 30 calendar days of work completion at the site.

1.04 SUBMITTALS

Submit the following for approval in accordance with SECTION 01021 SHOP DRAWINGS PRODUCT DATA AND SAMPLES:

Shop Drawings
    Surveys

Product Data
    Work Plan

Test Reports
    Surveys
    Sampling Liquid

1.05 REGULATORY REQUIREMENTS

A. Permits and Licenses

Obtain required federal, state, and local permits for excavation and storage of contaminated material. Permits shall be obtained at no additional cost to the UC Berkeley.

B. Air Emissions

Air emissions shall be monitored and controlled in accordance with Section 01351 ENVIRONMENTAL CONSIDERATIONS and described in this section.

PART 2 – PRODUCTS

2.01 SPILL RESPONSE MATERIALS

Provide appropriate spill response materials including, but not limited to the following: containers, adsorbents, shovels, and personal protective equipment. Spill response materials shall be available at all times when contaminated materials/wastes are being handled or transported. Spill response materials shall be compatible with the type of materials and contaminants being handled.

2.02 BACKFILL

Backfill material shall be obtained from the location indicated on the drawings. The Contractor shall prepare borrow source material to be free from roots and other organic matter, trash, debris, snow, ice or frozen materials and rocks larger than 2 inches. The Contractor shall reshape the borrow source pile to keep the pile stable and prevent ponding of water. The Contractor shall replace any damaged or missing straw waddles that currently surround the pile. The Contractor shall place unseeded hydromulch over the disturbed area of the pile.

The final lift of backfill shall consist of 3 inches of Class II aggregate base.

PART 3 - EXECUTION

3.01 SURVEYS

Surveys shall be performed immediately prior to and after excavation of contaminated material to determine the volume of contaminated material removed. Surveys shall also be performed immediately after backfill of each excavation. Provide cross-sections on 5 foot intervals and at break points for all excavated areas. The Contractor shall subcontract the pre and post excavation surveys through 4LEAF.

3.02 EXISTING STRUCTURES AND UTILITIES

No excavation shall be performed until site utilities have been field located. Take the necessary precautions to ensure no damage occurs to existing structures and utilities. Damage to existing structures and utilities resulting from the Contractor's operations shall be repaired at no additional cost to UC Berkeley. Utilities encountered that were not previously shown or otherwise located shall not be disturbed without approval from the Owner’s Representative.

3.03 CLEARING

The Contractor does not need to clear the grass or remove topsoil prior to excavation.

3.04 CONTAMINATED MATERIAL REMOVAL

A. Excavation

Areas of contamination shall be excavated to the depth and extent shown on the drawings and not more than 0.5 ft beyond the depth and extent shown on the drawings unless directed by the Owner’s Representative. The excavated soil shall be segregated into minimum of two waste disposal streams

between the excavations identified as PCB Excavation Area and Corporation Yard Excavation Area indicated on the drawings. The excavation of the areas shall be by manually means to protect the utilities in the areas. Any cinders or part of cinders shall be excavated and disposed along with the soil excavation. The Owner shall delineate the extent of the excavations in the field. Excavation shall be performed in a manner that will limit spills and the potential for contaminated material to be mixed with uncontaminated material. An excavation log describing visible signs of contamination encountered shall be maintained for each area of excavation. Excavation logs shall be prepared in accordance with ASTM D5434.

B. Shoring

If workers must enter the excavation greater than 3 feet, it shall be evaluated, shored, sloped or braced as required by 29 CFR 1926 section 650 and 8 CCR Subchapter 4 Article 6 by a competent person.

C. Dewatering

Surface water shall be diverted to prevent entry into the excavation. Dewatering shall be limited to that necessary to assure adequate access, a safe excavation, prevent the spread of contamination, and to ensure that compaction requirements can be met.

D. Additional Excavations

If confirmation sampling results indicate the contaminated soils remain the Owner's Representative will notify the Contractor. Where directed, continue excavation horizontal and vertical limits as directed by the Owner's Representative. Payment for additional excavation will be paid for at the contract unit price options.

3.05 AIR QUALITY

The Contractor shall control dust from excavation, transportation, and handling of all soils so that there is no visible dust at the fence line or in the exclusion zone of the excavation. Dust control measures shall include applying sufficient water to suppress dust while avoiding runoff to any outside of the project boundaries and modification of the means and methods of work. Water shall not be applied if there is a possibility of spreading contaminated soil or leaching contaminants from the soil or if it results in hazardous working conditions. The Owner's Representative will conduct perimeter dust monitoring and wind speed and direction measurements at the fenced perimeter or exclusion zones of the excavation areas. If real-time dust monitoring shows the perimeter action levels for dust are exceeded or if sustained wind speeds exceed 15 miles per hour (sustained for 15 minutes), the contractor will be verbally notified (and documented in the daily field notes) and work will stop.

Include provisions to ensure that airborne contaminant concentrations below the site specific action levels of air defined herein are not exceeded outside control area or by workers inside the exclusion zone control area. The site specific action levels for the dust concentration in the Corporation Yard is 16 $\mu g/m^3$ and 50 $\mu g/m^3$ at Building 150. Provide air monitoring, personnel monitoring, and sampling to ensure workers safety as determined by the CIH and as determined in the Contractor's Site Health and Safety Plan. As a minimum, sample the air daily at locations being disturbed, within the breathing zone of workers, and at the downwind border of the control area. Measure using instrument capable of detecting airborne contaminants at concentrations below the site specific action plans, or use a direct reading total particulate meter correlated to a worst case amount of contaminants attached to the particulate. When airborne concentrations exceed the site specific action plans at the breathing zone of workers, provide respirators and additional worker protection as dictated in the Site Health and Safety Plan. If airborne concentration

exceeds the site specific action plans at boundary of control area, immediately stop work and notify the Owner's Representative.

3.06 CONFIRMATION SAMPLING AND ANALYSIS

The Owner's Representative shall be present to inspect the removal of contaminated material from each site. After all material suspected of being contaminated has been removed, the excavation shall be examined for evidence of contamination. If the excavation appears to be free of contamination, the Owner's Representative shall collect confirmation samples for laboratory analysis to determine the presence of contamination exceeding the cleanup goals. Excavation of additional material shall be as directed by the Owner's Representative. The Contractor shall allow 14 days of downtime while the samples are being analyzed and to remobilize to the site for additional overexcavation based on the results of the field samples. Additional excavation shall be subject to approval by the Owner's Representative. Locations of samples shall be marked in the field and documented on the as-built drawings.

3.07 CONTAMINATED MATERIAL STORAGE

Material shall be placed in temporary storage immediately after excavation. The following paragraphs describe acceptable methods of material storage. Storage units shall be in good condition and constructed of materials that are compatible with the material or liquid to be stored. If multiple storage units are required, each unit shall be clearly labeled with an identification number and a written log shall be kept to track the source of contaminated material in each temporary storage unit.

A. Stockpiles

Stockpiles shall be constructed to isolate stored contaminated material from the environment. The maximum stockpile size shall be 100 cubic yards. Stockpiles shall be constructed in accordance with the remediation waste staging requirements in HSC (California HSC, Division 20, Chapter 6.5, Article 2, Section 25123.3[b][4][B]) and 40 CFR, Section 264.554. Stockpiles shall be constructed to include:

- Stockpiles will be constructed within the work zone and on a level surface. Stockpiles will be constructed to minimize the footprint of the stockpile area. The stockpile will remain covered with a minimum of 6-millimeter (mil) plastic except when soil is being placed or removed.

- The soil stockpiles will be constructed with berms (or straw wattle) and plastic liners (20-mil-thick minimum on the bottom in paved areas, 60-mil base in unpaved areas).

- The stockpile covers will be weighted down with sand bags or other means so that the stockpiles remain uncovered during periods of high winds and rain events. Site controls, including security fencing, around the piles will be maintained in good condition at all times, including during non-working hours, until the stockpiles are removed from the work zone.

- Erosion control measures will be employed to minimize the contribution of stockpiled soil to surface runoff and wind-generated particulate matter.

- Hazardous waste will not be stockpiled for longer than 90 days.

- The stockpiled soils will not contain free liquids.

- The stockpiles will be inspected in accordance with the SWPPP to verify that the BMPs for windblown dispersion and precipitation runoff and run-on are functioning properly.

- After stockpiles are removed from the Site, the stockpile area and any structures or equipment associated with the stockpile area will be inspected visually and sampled if contamination is possible. Any areas determined to have residual contamination will be remediated as necessary within 30 days after this determination is made.

- The stockpile area will be certified by a registered engineer or geologist for compliance with the above measures.

B. Roll-Off Units

Roll-off units used to temporarily store contaminated material shall be water tight. A cover shall be placed over the units to prevent precipitation from contacting the stored material. The units shall be located within the exclusion zone as shown on the drawings. Liquid which collects inside the units shall be removed and stored in accordance with paragraph Liquid Storage.

C. Liquid Storage

Liquid collected from excavations, stockpiles and equipment decontamination shall be temporarily stored in 55 gallon barrels or equivalent. Liquid storage containers shall be water-tight and shall be located within the exclusion zone as indicated.

3.08 SAMPLING

A. Sampling of Excavated Material

The owner will pre-characterize the soil for profiling based on samples results from previous site investigations. The Contractor is not required to sample the excavated material for disposal characterization. It is anticipated that the soil will be profiled as TSCA Class I material. The Contractor shall bid the transportation and disposal in accordance to the bid schedule.

B. Sampling Liquid

Liquid collected from excavations, storage areas, or decontamination facilities shall be collected by the Contractor into 55 gallons or other liquid tight similar containers. Samples shall be tested by the Owner's Representative for the following:

Chemical Parameter	Action Level
Polychlorinated Biphenyl's	TSD Facility Disposal Limits
Poly Aromatic Hydrocarbons	TSD Facility Disposal Limits
CAM 17 Metals	TSD Facility Disposal Limits
Dioxins/furans	TSD Facility Disposal Limits
Volatile Organic Compounds	TSD Facility Disposal Limits
Total Petroleum Hydrocarbons	TSD Facility Disposal Limits

Liquid with contaminant levels that exceed action levels shall be treated and/or disposed offsite. Analyses for contaminated liquid to be taken to an offsite treatment facility shall conform to local, state,

and federal criteria as well as to the requirements of the treatment facility. Documentation of all analyses performed shall be furnished to the Owner's Representative. Additional sampling and analysis to the extent required by the approved offsite treatment, storage or disposal (TSD) facility receiving the material shall be the responsibility of the Contractor and shall be performed at no additional cost to the U.C. Berkeley. The Owner's Representative shall approve of the disposal onsite or to a TSD facility prior to disposal of any liquid.

3.09 SPILLS

In the event of a spill or release of a hazardous substance (as designated in 40 CFR 302), pollutant, contaminant, or oil (as governed by the Oil Pollution Act (OPA), 33 U.S.C. 2701 et seq.), notify the Owner's Representative immediately. If the spill exceeds the reporting threshold, the Owner's Representative shall follow the pre-established procedures for immediate reporting. The Contractor shall take immediate containment actions to minimize the effect of any spill or leak. Cleanup shall be in accordance with applicable federal, state, and local regulations. As directed by the Owner's Representative, additional sampling and testing shall be performed to verify spills have been cleaned up. Spill cleanup and testing shall be done at no additional cost to the U.C. Berkeley.

3.10 BACKFILLING

A. Confirmation Test Results

Excavations shall be backfilled immediately after all contaminated materials have been removed and confirmation test results have been approved. Backfill shall be placed and compacted to the lines and grades shown on the drawings.

B. Compaction

Approved backfill shall be placed in lifts with a maximum loose thickness of 8-inches. Compaction shall be by a rammer tamper or in a method that is expected to achieve a compaction of 90 percent of ASTM D1557 maximum dry density. Compaction testing will be performed on two backfill areas selected by the Owner's Representative to evaluate the quality of the compaction.

3.11 DISPOSAL REQUIREMENTS

Provide all the materials required for the packaging, labeling, marking, placarding and transportation of hazardous wastes and hazardous materials in conformance with Department of Transportation standards. Details in this specification shall not be construed as establishing the limits of the Contractor's responsibility. Provide the Owner's Representative with EPA ID numbers, names, locations, and telephone numbers of TSD facilities and transporters. This information shall be contained in the Hazardous Waste Management Plan and shall be approved by the Owner's Representative prior to waste disposal.

Facilities receiving hazardous waste shall be permitted in accordance with 40 CFR 270 or operating under interim status in accordance with 40 CFR 265 requirements, or permitted by a state authorized by the Environmental Protection Agency to administer the RCRA permit program. Additionally, prior to using a TSD Facility, contact the EPA Regional Offsite Coordinator specified in 40 CFR 300, Section 440, to determine the facility's status, and document all information necessary to satisfy the requirements of the EPA Offsite policy and submit this information to the Owner's Representative.

The hazardous waste shall be transported to an approved hazardous waste treatment, storage, or disposal facility within 90 days of the accumulation start date on each container. Ship hazardous wastes only to facilities which are properly permitted to accept the hazardous waste or operating under interim status. Ensure wastes are treated to meet land disposal treatment standards in 40 CFR 268 prior to land disposal. Propose TSD facilities, subject to the approval of the Owner's Representative. Submit Certificates of Disposal documenting the ultimate disposal, destruction or placement of hazardous wastes, 90 days of initial shipment. Receipt of these certificates will be required for final payment.

-- END OF SECTION 026113 --