

TABLE OF CONTENTS

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

00 31 32 Geotechnical Data

DIVISION 01 - GENERAL REQUIREMENTS

01 10 00 Summary
01 21 00 Allowances
01 22 00 Unit Prices
01 23 00 Alternates
01 25 00 Substitution Procedures
01 26 10 Requests for Information (RFI) Procedures
01 29 00 Payment Procedures
01 31 13 Project Coordination
01 31 19 Project Meetings
01 32 16 Progress Schedules
01 33 00 Submittal Procedures
01 33 23 Shop Drawings, Product Data, and Samples
01 33 29 Buy Clean California Act Requirements
01 35 00 Special Project Procedures
01 35 43 Environmental Mitigation
01 41 00 Regulatory Requirements
01 42 10 Abbreviations, Symbols, and Definitions
01 42 19 Reference Standards
01 43 39 Mockups
01 45 00 Quality Control
01 45 16 Construction Phase Field Water Testing
01 50 00 Temporary Facilities and Controls
01 51 00 Temporary Utilities
01 56 39 Tree Protection
01 57 13 Temporary Erosion and Sediment Control (for Projects
..... Under One Acre)
01 57 23 Temporary Storm Water Pollution Control (for Projects One
..... Acre or more)
01 60 00 Product Requirements
01 71 23 Field Engineering
01 73 29 Cutting and Patching
01 74 19 Construction Waste Management and Disposal
01 77 00 Closeout Procedures
01 78 30 Guarantees, Bonds, Service and Maintenance Contracts
01 81 12 Sustainable Design Requirements - CALGREEN
01 81 13 LEED Requirements
01 81 19 Indoor Air Quality Requirements
01 91 00 Commissioning

SECTION 00 31 32
GEOTECHNICAL DATA

EDIT TEXT BELOW TO COORDINATE GEOTECHNICAL REPORT FOR THE PROJECT.

1.1 REFERENCE STANDARDS

- A. A geotechnical investigation report(s) has been prepared for Project site:

GEOTECHNICAL INVESTIGATION
FOR
[PROJECT NAME HERE]
UNIVERSITY OF CALIFORNIA
SANTA CRUZ, CALIFORNIA

FOR
[PROJECT SPONSOR HERE]
UCSC

BY
[CONSULTANT NAME HERE]
GEOTECHNICAL ENGINEERS

[DATE HERE]

- B. These reports may be inspected at The University's Representative's office.
- C. Additional copies may be obtained at the cost of reproduction and handling (estimated cost of \$55.00) upon request and upon full payment; address requests to The University's Representative.
- D. The records of investigation of soil or subsurface conditions and logs of test borings which are made available by The University are not part of the Contract and are solely for the convenience of the Bidder or Contractor. It is expressly understood and agreed that The University assumes no responsibility whatsoever in respect to the sufficiency or accuracy of the investigations thus made, the records thereof, or of the interpretations set forth therein, and there is no warranty or guaranty, either express or implied, that the conditions indicated by such investigations or records are representative of those existing throughout such areas or any part therefore, or that unanticipated developments may not occur, or that materials other than, or in proportions different from those indicated, may not be encountered.
- E. The availability or use of the records of investigations of soil or subsurface conditions and/or logs of test borings:
1. Shall not be construed as a waiver of Contractor's duty to examine the site of work contemplated and the Contractor is cautioned to make such independent investigations and examinations as the Contractor deems necessary to satisfy the Contractor as to the subsurface conditions to be encountered in the performance of the work.

2. Will not relieve the Contractor from the risk of unanticipated soil or subsurface conditions or from properly fulfilling the terms of the Contract at the proposal price.
3. If the soil or subsurface conditions are such which require, in the opinion of The University's Representative, design details which differ from those design details shown in the Contract Documents and The University's Representative finds that such revised design details will cause an increase or decrease in the cost of, or the time required for the performance of the Contract, The University's Representative will, after approval by The University modify the Contract terms in writing to provide for the change in design details and to provide for an adjustment in cost and/or time of performance as permitted in General Conditions.

END OF SECTION 00 31 32

DRAFT

SECTION 01 10 00

SUMMARY

PART 1 - GENERAL

1.1 WORK REQUIRED BY CONTRACT DOCUMENTS

A. Scope of Work:

EDIT THE FOLLOWING PARAGRAPHS TO DESCRIBE THE SCOPE OF WORK.

1. Construction of **[PROJECT NAME]** includes **[DEFINE SCOPE OF WORK]**
2. The work to be done includes all labor, tools and equipment necessary to furnish and install all materials and equipment shown on the drawings and described herein and to perform tests described herein, to provide complete and operating systems to the extent specified and shown on the drawings. The Contractor shall furnish all equipment, material and supplies, except where specifically noted as existing or supplied by The University.

B. General Description of Work: **[PROJECT NAME]** at the University of California Santa Cruz, provides **[AREA]** - square feet of **[PROJECT SCOPE]**. This work includes, but is not limited to, the following:

EXAMPLES

1. *Site work including demolition, erosion control, tree protection, misc. grading, landscape and irrigation, and drainage corrections.*
2. *Concrete demolition and concrete flatwork.*
3. *Wood stud framing and sheathing.*
4. *Exterior cement plaster finishes and waterproofing systems, window repair and/or replacement.*
5. *Interior gypsum wallboard walls and ceilings.*
6. *Interior and exterior painting.*
7. *Miscellaneous metal railings, flashing, metal accessories and attachments.*
8. *Doors and frames, door hardware, as required for repairs(s).*
9. *Removal and replacement of shower pans, included associated finish work.*
10. *Insulated standing seam metal panel roofing system, roof accessories, associated sheet metal work, and waterproofing.*
11. *Coordination of repairs related to heating and ventilation systems, including related electrical and lighting systems, telephone and data lines, energy management systems, fire alarm and fire protection systems.*
12. *Testing and commissioning of complete installed equipment and systems.*
13. *Coordination, implementation and documentation of LEED Credit Requirements.*
14. Special care shall be given to utility shutdowns of and tie-ins to existing campus utilities. Impact to the campus operations must be minimized.
15. Special care shall be taken with respect to existing grades and the preservation of existing trees. Measures consistent with such considerations will be required during construction.
16. Overall site coordination with adjacent facilities. Continued operations in adjacent facilities are required throughout all phases of construction.

C. Location of Work: University of California Santa Cruz, California campus, at **[BUILDING, if applicable]**.

D. Limits of Work:

As shown on Drawings. Note that the Limits of Work may be required to be temporarily adjusted to accommodate connections to existing utilities, associated road repaving, or other work beyond immediate vicinity of building construction. Limits of work may not be adjusted in a manner that decreases any tree/vegetation protection zone identified on construction drawings without prior written permission from the University's Representative. Erosion control and other specific work shown on the Drawings shall be provided within the Limits of Work.

DETERMINE PROJECT TIER, MINIMUM UNIVERSITY REQUIREMENT, CALGREEN COMPLIANT OR LEED AND EDIT THIS SECTION ACCORDINGLY. DELETE THE FOLLOWING PARAGRAPH FOR A NON-LEED PROJECT.

E. **Environmental Requirements:**

1. The University of California Policy on Sustainable Practices requires that all projects to obtain LEED certification. Based on the nature of this project it has been determined that this project can proceed without attempting to obtain LEED certification. However, the submittal of a LEED scorecard and supporting documentation will be required to be submitted to the UC Office of the President showing the credits that the project did achieve. The intent of this "green" Project is to comply with as many sustainable design features and recommendations as are economically feasible. These include providing energy efficient buildings which are easy and inexpensive to maintain, using construction materials which reduce environmental impacts, and utilizing construction methods which minimize waste and maximize recycling of materials during construction.
2. Certain specific manufacturers, materials, methods and equipment have been selected and specified to help meet the LEED and environmental goals of this Project. Any substitution requests will be evaluated based on LEED and environmental considerations as well as on specified criteria.
3. The Contractor, subcontractors, suppliers, and all individuals working on this Project are expected to cooperate and participate in the implementation of these environmental requirements.
4. Refer to individual specification's sections for specific sustainability requirements and submittals.
5. Refer to Section 01 35 43 - Environmental Mitigation and individual specifications sections for environmental mitigation requirements.
6. The University's 01 74 19 Management and Disposal, Section 01 74 19, is aligned with and exceeds LEED Construction and Demolition Waste Management Credits. MR2.2, and exceeds the requirements of MR2.1

KEEP FOR NON-RESIDENTIAL REMODEL, ADDITION GREATER THAN 2000 SF, OR NEW CONSTRUCTION.

F. CALGreen Requirements:

1. This project is required to comply with construction method and material as designated by the California Green Building Standards Code.
2. See Section 01 81 12 - Sustainable Design Requirements – CALGREEN, and individual specifications sections for specific sustainability requirements and submittals.
3. The University's Construction Waste Management and Disposal exceeds CALGreen Requirements, See Section 01 74 19 - Construction Waste Management and Disposal.

1.2 CONTRACT METHOD

- A. Construct the Work under a **[CM@Risk, DESIGN-BUILD, LUMP SUM]** contracting method.
- B. The Contractor shall be responsible for coordinating their operations with work performed under separate contracts with The University.

1.3 SUBSTANTIAL COMPLETION

- A. Substantial Completion shall only be applicable to the entire Work.

1.4 FUTURE WORK

- A. **[EDIT IF NECESSARY]**

1.5 WORK SEQUENCE OR PHASING

- A. The constraints of the academic calendar and a lack of availability of alternate space for the occupants of the existing facilities **[STATE CONSTRAINTS]**. *EXAMPLE: require work to be performed adjacent to occupied administrative and teaching facilities. Furthermore, the work will be required to allow for full student occupancy of the dormitories during the academic year).*
 - 1. *Access to the building will remain fully functional over the course of construction.*
 - 2. *Work on existing site utilities shall be phased such that the duration of any required shut down to utilities serving existing facilities is minimized. Demolition of active utilities shall not occur until new or temporary systems are in place as required to keep services to existing facilities operational. Utility shut downs and cutovers shall be submitted for approval by the University's Representative a minimum of 90 calendar days in advance of the work. Utility shut downs will not be allowed unless approved by the University's Representative a minimum of five (5) calendar days in advance of the Work. Utility shut-downs shall be limited to a maximum duration of eight (8) hours per occurrence.*

1.6 SITE ACCESS

- A. Sequence all construction, including connections to existing utilities with associated site work, to preserve the following existing site access, circulation, and use adjacent to the Site. Access must be paved, lighted, and uninterrupted.
 - 1. **[INSERT 1]** *(Example: Existing Hydrants on service and all access roads, as well as all building standpipes)*
 - 2. **[INSERT 2]** *(Example: All-weather access at the project site)*
 - 3. **[INSERT 3]** *(Example: Parking for administrative personnel and maintenance staff)*
 - 4. **[INSERT 4]** *(Example: Disabled access around site(s))*
 - 5. **[INSERT 5]** *(Example: Pedestrian access around site(s))*

1.7 CONTRACTOR'S USE OF PROJECT SITE

- A. Contractor's use of the Project site for work and storage is restricted to the areas designated on the Drawings.

- B. Additional Contractor parking and staging will be available [INSERT LOCATION] (Example: north of the existing East Remote parking lot on Hagar Drive and/or Parking Lot 147).
- C. The Contractor shall limit use of premises for work and storage allowing for work by other contractors.
- D. Coordinate use of premises under direction of The University's Representative. Cooperate with The University to minimize conflict and to facilitate The University's operations.
- E. Cooperate with other contractors to facilitate work to be done within Limits of Work under the Contract. Access on major roads and access right-of-way is to be shared with other contractors. All weather access is to be adequately maintained for all major roads and rights-of-way within the Project Limits of Work.
- F. Contractor shall provide and maintain all fencing, barricades, guard rails, bridges, warning signs, lights, paved paths, and the like as necessary to protect Contractor's own personnel, authorized visitors, and outside public from the Project site.
- G. Contractor shall be responsible for protection and safekeeping of products furnished under the Contract which are stored within Limits of Work.
- H. Move products stored under the Contractor's control which interfere with operations of The University.
- I. Stockpiling of materials, storage of equipment, trailers and other appurtenances related to construction operations will be limited to area(s) within Limits of Work with specific locations to be approved by The University's Representative.
- J. Note that construction operations of any kind are not permitted in tree protection zones identified on construction drawings. Refer to Section 01 56 39 - Tree Protection.
- K. All areas within Limits of Work which do not require specific work shall be returned to The University at completion of the Project in same condition as received by the Contractor.
- L. Disagreements between Contractor and other contractors about concurrent use of work areas or access to the site which are not resolved by the participants shall be referred to The University's Representative. Contractor shall agree to abide by The University's Representative's determination as to concurrent use or priority of access and to perform its work in compliance with The University's Representative's resolution at no additional cost to The University.
- M. The Limits of Work shall not be used for stockpiling or storage of materials, equipment, trailers, and other appurtenances not related to the construction operations of this Project without written approval from The University's Representative.
- N. Refer to Section 01 50 00 - Temporary Facilities and Controls for parking requirements.
- O. Refer to Section 01 35 43 - Environmental Mitigation for environmental mitigation measures.
- P. When project scope requires access to high security areas, all Contractor's personnel accessing the high security areas will be required to display photo identification badges at all times during work in those areas. Contractor shall schedule access to these areas a minimum of two weeks in advance.

1.8 CONDUCT OF THE CONTRACTOR'S PERSONNEL

- A. The Contractor shall at all times maintain discipline among personnel employed at or having business at the Project site, including during meal and break periods. The Contractor shall act promptly to correct conduct which The University's Representative deems intimidating, offensive, or hostile to The University's personnel, students, and visitors; such as: whistling or staring at, calling to, or commenting on persons passing the site (whether intended as complimentary or offensive); making obscene gestures; making or displaying offensive drawings, graffiti, or photographs; making propositions or invitations for dates or sex; or making racially, sexually, or ethnically related remarks or jokes.
- B. Contractor's personnel shall be subject to campus prohibitions and regulations which prohibit smoking. Smoking and the use of smokeless tobacco or unregulated nicotine products (such as electronic cigarettes) is prohibited on and within UCSC managed property. UCSC managed property includes all UCSC facilities, owned or leased, both indoor and outdoor. The sale or distribution of tobacco and unregulated nicotine products on or within UCSC managed property is also prohibited.
- C. The Contractor shall inform all new personnel of this policy.

1.9 OCCUPANCY

- A. The University's Occupancy: The University will occupy the Project site except within indicated Limits of Work and existing adjacent buildings during the entire period of construction. Contractor shall cooperate fully with The University during construction operations to minimize conflicts and to facilitate The University's usage. Contractor shall perform all work so as not to interfere with The University's operations.

1.10 UNIVERSITY-FURNISHED ITEMS

EDIT THE FOLLOWING TO DESCRIBE ITEMS THE UNIVERSITY WILL PROVIDE. IF THE UNIVERSITY IS NOT PROVIDING EQUIPMENT OR ACCESSORIES, DELETE.

- A. The University will provide certain items including:
 - 1. [INSERT ITEM 1] (Example: HC parking ADA signs)
 - 2. [INSERT ITEM 2] (Example: Knox Box)
 - 3. [INSERT ITEM 3] (Example: Limited Toilet Room Accessories (Toilet Paper Dispensers, Paper Towel Dispensers and Sanitary Napkin Dispensers))

1.11 APPLICABILITY OF ALL SECTIONS OF SPECIFICATIONS

- A. All sections of the Specifications and Drawings are interdependent and applicable to the Project as a whole.

1.12 DIVISION OF THE SPECIFICATIONS

- A. The Specifications are divided for convenience into sections as set forth in the Table of Contents. The actual limitation of work in the various trades and/or sections of the Specifications are the responsibility of Contractor.

1.13 START OF WORK

- A. Contractor shall give The University, via The University's Representative, written notice not less than five (5) working days in advance of the actual date on which the Work will be started. Contractor shall be entirely responsible for any delay in the Work which may be caused by Contractor's failure to give such notice.
 - 1. Notice of start of Work may not be submitted prior to approval of the project Storm Water Pollution Prevention Plan (SWPPP) or Erosion and Sediment Control Plan (ESCP) (as applicable), (see Section 01 57 13 – Temporary Erosion and Sediment Control and Section 01 57 23 – Temporary Storm Water Pollution Control) and Noise Mitigation Program (see Section 01 50 00 - Temporary Facilities and Controls).

1.14 SURROUNDING SITE CONDITION SURVEY

- A. Prior to commencing the Work, Contractor, The University, and The University's Representative shall tour the Project site together to examine and record damage to existing adjacent buildings, curbs, roads, paved parking areas, and other structures 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 existing adjacent buildings, curbs, roads, paved parking areas, and other structures and improvements not noted in the original survey, but subsequently discovered, shall be reported to The University's Representative.

1.15 EXAMINATION OF THE SITE AND VERIFICATION OF CONDITIONS

- A. Contractor shall examine the site and become acquainted with the conditions under which the Work is to be carried out. Upon submitting Contractor's bid, Contractor shall be held to have made such examination, and no allowance for extras will be allowed for any error or oversight resulting from Contractor's unfamiliarity with the site or existing conditions. Contractor shall obtain accurate field dimensions of all related areas, spaces, openings, levels, and items of adjacent work and, before commencing work, report to The University, in writing, via The University's Representative, all discrepancies between the Contract Documents and the actual field conditions. Commencement of Work by Contractor shall constitute acceptance of all existing conditions affecting the Work.

1.16 INTENT OF THE CONTRACT DOCUMENTS

- A. The intent is to provide The University with a Project that is complete in all respects as described in these Contract Documents. All items necessary or reasonably required are to be provided to produce a complete and operational Project.

1.17 ORDER OF PRECEDENCE

- A. See General Conditions, Article 1.3.

1.18 INTERPRETATION OF CONTRACT DOCUMENTS

- A. Should Contractor find discrepancies in, or omissions from the Drawings or Specifications, or should the Contractor be in doubt as to their meaning, the Contractor shall at once notify The University's Representative in writing and should it be found that the point in question is not clearly and fully set forth, a written clarification will be issued. Neither the University's Representative nor The University will be responsible for any oral instructions.

1.19 ORAL MODIFICATIONS

- A. It shall be distinctly understood that no oral statement of any person shall be allowed in any manner to modify any of the Contract provisions. Changes shall be made only on written authorization of The University's Representative, except in an emergency endangering life or property.

1.20 TRANSMITTAL

- A. Any correspondence from one party to the other under the Contract shall be in writing, and shall be dated and signed by the party initiating such correspondence or by duly authorized representative of such party.

1.21 CORRESPONDENCE

- A. A correspondence memo will be prepared by The University's Representative at the commencement of work showing routing, number of copies, and addresses of all correspondents.

1.22 COPIES OF DOCUMENTS

- A. Contractor will be furnished with two (2) complete sets of all Contract Documents at no additional charge. An electronic PDF copy of Contract Documents will also be provided.

1.23 SPECIFICATIONS AND DRAWINGS

- A. Contractor shall keep on the Project site a copy of the Specifications and Drawings, and the same shall be available at all reasonable times for inspection and use by The University's Representative and by any other person authorized by The University's Representative. Any Drawings listed in the detail Specifications shall be regarded as a part thereof and of the Contract. Anything mentioned in these Specifications and not shown on the Drawings, or shown on the Drawings and not mentioned in these Specifications, shall be mutually inclusive and of like effect as though shown or mentioned in both. Where Specifications are in conflict with the Drawings, Contractor shall request in writing a clarification from The University's Representative before proceeding with the work.
- B. It shall be the duty of Contractor to see that the provisions of these Specifications are complied with in detail irrespective of the inspection given the work during its progress by The University's Representative. Any failure on the part of Contractor to observe the Specifications will be sufficient cause for the rejection of the work at any time before its acceptance.
- C. The University's Representative will furnish from time to time, such detail drawings, plans, profiles, and information as The University's Representative may consider necessary for Contractor's guidance to insure the proper and adequate execution of the Contract. Contractor shall comply with such detail drawings, plans, profiles and information.

- D. Only favorably reviewed shop drawings and submittals shall be used in construction. Refer to Section 01 33 23 - Shop Drawings, Product Data, and Samples.

1.24 MANUFACTURER'S INSTRUCTIONS

- A. Where the contract documents state that products, processes, equipment or the like shall be installed or applied in accordance with manufacturer's instructions, directions or specifications, they shall be construed to mean that said application or installation shall be in strict accordance with printed instructions furnished by the manufacturer of the material concerned for use under conditions similar to those at the Project site.
- B. The manufacturer's directions do not take precedence over the Contract Drawings and Specifications. Where such directions are in conflict with the Contract Documents, Contractor shall request in writing a clarification from The University's Representative before proceeding with the work.

1.25 NOTICE AND SERVICE THEREOF

- A. See General Conditions, Article 15.8.

1.26 MANAGEMENT

- A. Contractor shall designate in writing before starting Work, an authorized representative (Project Manager) who shall have complete authority to represent and act for Contractor. This representative shall be acceptable to The University and shall be approved by The University's Representative.
- B. Contractor shall designate in writing before starting Work, an authorized representative (Superintendent, as per General Conditions, Article 3). This representative shall be acceptable to The University and shall be approved by The University's Representative. Said authorized representative shall be present at the site of the Work at all times while Work is actually in progress on the Contract; and during periods when Work is suspended, arrangements acceptable to The University shall be made for any emergency work which may be required.
- C. If such approval, as noted above for the Project Manager and Superintendent, shall be withdrawn by The University's Representative, Contractor shall, as soon as is practicable after having received written notice of such withdrawal, remove the representative(s) from the Project and shall not thereafter employ that person as Contractor's representative(s) on the Project. Contractor shall replace said representative(s) with another representative acceptable to The University and approved by The University's Representative as specified above.

1.27 PAYMENT FOR PATENTS AND PATENT INFRINGEMENT

- A. All fees or claims for any patented invention, article or arrangement that may be used upon or any manner connected with the performance of the Work or any part thereof shall be included in the price bid for doing the work, and Contractor and Contractor's sureties shall protect and hold The University's Representative, and The University, together with all their officers, agents and employees, harmless against liability of any nature or kind for any and all costs, legal expenses, and demands made for such fees or claims and against any and all suits and claims brought or made by the holder of any invention or patent, or growing out of any use or alleged infringement

of any invention or patent, or on account of any patented or unpatented invention, process, article, or appliance manufactured for or used in the performance of the Contract, including its use by The University, unless otherwise specifically stipulated in the Contract. Before final payment is made on the Contract, Contractor shall furnish acceptable proof to The University of a proper release from such fees or claims.

1.28 RELEASE

- A. See General Conditions, Article 9.8.4.

1.29 CLEANING

- A. Contractor shall clean up the Project and construction area such that the Project site is kept continuously clean. The Contractor is required to maintain at least one (1) dumpster adequately sized for general use as well as trash receptacles as necessary on the Project site. The Contractor shall dispose of all debris in accordance with Section 01 35 00 - Special Project Procedures, and Section 01 50 00 - Temporary Facilities and Controls.

PART 2 - PRODUCT: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 10 00

SECTION 01 21 00

ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

- A. Included in the Contract Sum are all Allowances stated in the Contract Documents. Items covered by Allowances shall be supplied up to such amounts as The University's Representative may direct.
- B. The following shall apply, unless otherwise provided in the Contract Documents:
 - 1. Allowances shall cover the direct costs to the Contractor for labor, materials, and equipment only, including materials and equipment delivered at the Project site and all required taxes, less applicable trade discounts. In instances of fixed specified material unit prices, allowance shall cover the unit price material cost plus the direct cost for labor and equipment only.
 - 2. Contractor's costs required for storage on and off the Project site, security, loading and unloading, handling at the Project site, overhead, profit, and other administrative expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the Allowances.
 - 3. Whenever costs are more than or less than Allowances, the Contract Sum shall be adjusted by Change Order based on:
 - a. The difference between actual costs and the Allowances.
 - b. Changes in Contractor's costs.

1.2 DESCRIPTION

- A. The Contract shall include provision of items for further specification by The University's Representative as listed in this Section.
- B. The allowance amounts specified are intended to cover the cost of such items to the Contractor and include the Contractor's additional direct expenses. Administrative expenses and profit which are allowed for in the Contract Sum (refer to General Conditions Article 7), are to be included in the Contract Sum, and not in the Allowances.
- C. The University may require that sealed bids for Allowances be submitted and opened in The University's Representative's presence.
- D. Submit invoices and accounts for these items to The University's Representative for review.
- E. Related Requirements:
 - 1. Unit prices: Refer to Section 01 29 00 - Payment Procedures.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION:

3.1 SCHEDULE OF ALLOWANCES:

EDIT THE RED TEXT BELOW TO LIST ALLOWANCES.

NOTE: ALLOWANCES ARE NOT TO BE ADDED TO THE CONTRACT SUM WHEN CALCULATING THE MAXIMUM ANTICIPATED CONTRACT VALUE.

- A. **Allowance # 1: [DESCRIPTION]**
- B. **Allowance # 2: [DESCRIPTION]**
- C. **Allowance # 3: [DESCRIPTION]**
- D. **Allowance # 4: [DESCRIPTION]**

END OF SECTION 01 21 00

DRAFT

SECTION 01 22 00

UNIT PRICES

PART 1 - GENERAL

1.1 UNIT PRICES

- A. Unit Prices quoted in the Bid Form are for additions of (and deletions of) approved items of work. All Unit Prices quoted shall be for installed, completely furnished, and operable modifications according to the Contract Documents, and shall include profit, overhead, taxes, cost of coordinating the Unit Price work with adjacent work, compensation for risk of loss or damage to the Work regardless of cause, all expenses due to delays in performance, so they are the complete price to the University. The Unit Prices shall not apply to work the Contractor elects to do for its own convenience or to correct errors committed by the Contractor.
- B. All Unit Prices shall remain in effect during construction and will be used to adjust the Contract Sum.
- C. The Contractor shall immediately notify the University's Representative when conditions indicate the probability of the need to make use of any Unit Price work.
- D. The applicability of, measurement methods for, documentation of, and the final adjustment in the Contract sum for Unit Price work shall be determined by The University's Representative.
- E. After performing Unit Price work as directed by The University's Representative, the Contractor shall take necessary measurements in the presence of The University's Inspector and shall submit calculations of the quantities to The University's Representative for approval. The Contractor shall notify the University's Inspector one (1) day in advance of taking measurements.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

INSERT DESCRIPTION(S) OF UNIT PRICES BELOW.

- 1. **Unit Price # 1: [DESCRIPTION]**
- 2. **Unit Price # 2: [DESCRIPTION]**
- 3. **Unit Price # 3: [DESCRIPTION]**
- 4. **Unit Price # 4: [DESCRIPTION]**

END OF SECTION 01 22 00

SECTION 01 23 00

ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

- 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. An Alternate is an amount proposed by bidders and stated on the Bid Form for specific work that may be added to or deducted from the base bid amount if the University decides to accept a corresponding change as described by the Contract Documents. Alternates described in this section are part of the Work only if enumerated 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 noted, 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 through 48 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 Contractor shall quote prices for the Alternates listed below in the space provided therefore on the Bid Form. The Contractor shall be responsible for determining exact quantities of materials involved with the Alternates. Work for the Alternates shall be in strict accordance with the Specifications and Drawings.

NOTE: ENSURE THAT THE BID FORM CLEARLY STATES THAT COSTS LISTED FOR EACH ALTERNATE INCLUDE COSTS OF RELATED COORDINATION, REVISION, OR ADJUSTMENT.

1.2 BIDS REQUIRED

- A. Base Bid: The Base Bid consists of all items indicated and/or specified in the Drawings, Specifications and/or Bid Form. The costs for Additive Alternates will be added to the Base Bid, and the costs for Deductive Alternates will be subtracted from the Base Bid.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate Bids: Alternate bids shall be additive or deductive as noted, and The University may accept alternates in any combination with the base bid. The Contractor shall submit the following alternate bids.

DESCRIBE EACH ALTERNATE REQUIRED FOR PROJECT BELOW.

1. **ALTERNATE NO. #1**
[DESCRIPTION]
2. **ALTERNATE NO. #2**
[DESCRIPTION]
3. **ALTERNATE NO. #3**
[DESCRIPTION]

END OF SECTION 01 23 00

SECTION 01 25 00

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUBSTITUTION OF MATERIALS AND EQUIPMENT

- A. Catalog numbers and specific brands or trade names followed by the designation "or equal" are used in conjunction with material and equipment required by the Specifications to establish the standards of quality, utility, and appearance required. Wherever more than one (1) manufacturer's product is specified, the first-named product is the basis for the design. 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 accepted in writing by The University's Representative.
 2. Contractor shall submit to The University's Representative, within thirty-five (35) working days after the date of commencement specified in the Notice to Proceed, a typewritten list containing a description of each proposed substitute material or equipment and the reason why substitution is being proposed.
 3. Contractor shall provide supporting data required by Paragraph 1.1C of this Section. The supporting data must be submitted in reasonable promptness and in a sequence as to cause no delay in the Work, or in activities of The University or of Separate Contractors.
 4. The University's Representative will accept, in writing, proposed substitutions that are in The University's Representative's opinion equal in quality, utility, and appearance to the material or equipment specified, after a complete submittal of all supporting data, as required by Paragraph 1.1C of this Section, is received by The University's Representative, The Contractor must allow at least ten (10) working days for The University's Representative's review.
 5. Such acceptance shall not relieve Contractor from complying with the requirements of the Drawings and the Specifications.
 6. Contractor shall be responsible for all costs (including additional design and engineering costs) of any changes resulting from Contractor's proposed substitutions which affect other parts of the Work or the work of Separate Contractors. Contractor is responsible for coordination of all other work effected by the substitution, including vibration, isolation, and acoustical requirements and criteria, at no additional cost to the University.
 7. The decision of The University's Representative shall be final.
- B. If a request for substitution occurs after the thirty-five (35) working day period, the substitution may be reviewed only at the sole discretion of The University's Representative; and the costs of such review, as approved by The University, 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. Use substitution request form.
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 University's Representative.
 2. Statement by Contractor that the proposed substitution is in full compliance with the requirements of the Contract Documents and applicable Code requirements, and that any

- costs as a result of delay in the Work related to the proposed substitution will be borne by the Contractor.
3. List of Subcontractors, if any, that may be affected by the substitution.
 4. 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. Failure of the Contractor to submit proposed substitutions in the time limits and manner described within this Section shall be sufficient cause for The University's Representative to reject and disapprove any substitutions otherwise proposed.
- E. Wherever catalog numbers and specific brands or trade names not followed by the designation "or equal" are used in conjunction with material or equipment required by the Specifications, no substitutions will be considered.
- F. The thirty-five (35) day submittal period does not excuse Contractor from completing the Work within the Contract Time or excuse Contractor from paying liquidated damages if Final Completion is delayed.
- G. Wherever more than one (1) manufacturer's product is specified, the first-named product is the basis for the design used in the work and all other listed products and/or manufacturers are considered substitutions. The use of alternative-named manufacturers' products or substitutes may require modifications in the design. If such substitutions are proposed by Contractor and are approved by The University's Representative, Contractor shall assume all costs required to make necessary revisions and modifications to the design, including additional costs to The University for evaluation of revisions and modifications of the design resulting from the substitutions submitted by Contractor to The University's Representative.
- H. When materials and equipment are specified by first manufacturer's name and product number, second manufacturer's name and product number, and "or equal," supporting data for the second manufacturer's product, if proposed by Contractor, is not required. However, Contractor shall be responsible for all costs (including additional design and engineering costs) of any changes resulting from the use of the second manufacturer which affect other parts of the Work or the work of Separate Contractors. Contractor is responsible for coordination of all other work effected by the substitution, including vibration, isolation, and acoustical requirements and criteria, at no additional cost to the University.
- I. When materials and equipment are specified by first manufacturer's name and product number, second manufacturer's name (without the product number), and "or equal," supporting data for the second manufacturer's product, if proposed by Contractor, shall be submitted in accordance with the requirements for substitutions.
- J. If The University's Representative, in reviewing the list of substitution materials and equipment, requires revisions or corrections to be made to previously accepted Shop Drawings and supplemental supporting data to be resubmitted, Contractor shall promptly do so. If any proposed substitution is judged by The University's Representative to be unacceptable, the specified material or equipment shall be provided.
- K. Samples may be required. Tests required by The University's Representative for the determination of 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 University's Representative.
- L. In reviewing the supporting data submitted for substitutions, The University's Representative will use, for purposes of comparison, all the characteristics of the first listed material or equipment as they appear in the manufacturer's published data even though all the characteristics may not have been particularly mentioned in the Specifications. If more than two submissions of supporting data

are required, the cost of reviewing the additional supporting data shall be borne by Contractor; and The University will deduct the costs from the Contract Sum.

- M. Where alternate brands are specified as equal but without model number or other specific identification, Contractor shall submit this information in the foregoing listing for approval by The University's Representative. Specified items shall be listed in the following format: first manufacturer and model number, equivalent second manufacturer and model number. Contractors wishing to submit any 'equivalent' second manufacturer shall do so in accordance with this Section.
- N. When an unnamed brand or materials are proposed as equal, sufficient information shall be included to prove equality to and for comparison with the named brand. The burden of proving the quality rests with Contractor; final decision rests with The University's Representative.
- O. Environmental Criteria for Evaluation of Substitute Products: The following environmental criteria will be used by the University's Representative to evaluate substitute products proposed by the Contractor.

EDIT THE FOLLOWING TO COORDINATE WITH THE PROJECT.

- 1. Meeting LEED and/or sustainability objectives.
- 2. Recycled Content: Post-consumer content and/or pre-consumer content
- 3. Toxicity.
 - a. Elimination of toxic substances as noted in MSDS Sheets
 - b. Off-gassing.
- 4. Manufacturing Process.
 - a. Off-gassing
 - b. Potential soil/water contamination.
 - c. Embodied energy to produce and transport the product
- 5. Proximity of manufacturing plant to the Project site.
- 6. Recyclability.
 - a. Ease of deconstruction.
 - b. Ease of separation of contaminants.
 - c. Manufacturer program for recycling products.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than thirty-five (35) days prior to time required for preparation and review of related submittals.
 - 1. Conditions: The University's Representative will consider Contractor's request for substitution when the following conditions are satisfied:

- a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - b. Requested substitution provides sustainable design characteristics that specified product provided for achieving LEED prerequisites and credits as required.
 - c. Requested substitution will not adversely affect Contractor's construction schedule.
 - d. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - e. Requested substitution is compatible with other portions of the Work.
 - f. Requested substitution has been coordinated with other portions of the Work.
 - g. Requested substitution provides specified warranty.
 - h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.
- B. Substitutions for Convenience: Architect will consider requests for substitution if received within thirty-five (35) days after the Notice to Proceed.
1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:
 - a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 - b. Requested substitution does not require extensive revisions to the Contract Documents.
 - c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 - d. Requested substitution provides sustainable design characteristics that specified product provided for achieving LEED prerequisites and credits as required.
 - e. Requested substitution will not adversely affect Contractor's construction schedule.
 - f. Requested substitution has received necessary approvals of authorities having jurisdiction.
 - g. Requested substitution is compatible with other portions of the Work.
 - h. Requested substitution has been coordinated with other portions of the Work.
 - i. Requested substitution provides specified warranty.
 - j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION

3.1 FORM

**SUBMITTAL TRANSMITTAL
REQUEST FOR SUBSTITUTION**

Submittal Number: _____

SUBMITTAL

Specification Section	Paragraph	Description
_____	_____	_____
_____	_____	_____

The following supporting information is attached:

- | | | |
|---|---|--|
| <input type="checkbox"/> Product Data | <input type="checkbox"/> Shop Drawings | <input type="checkbox"/> Schedules (Contract Time) |
| <input type="checkbox"/> Certified Test Results | <input type="checkbox"/> Calculations | <input type="checkbox"/> Color Selection Charts |
| <input type="checkbox"/> Product/Material Samples | <input type="checkbox"/> Manufacturer's Recommendations | |
| <input type="checkbox"/> Other: _____ | | |

Copies submitted per Section 01 33 00 - Submittal Procedures and Section 01 33 23 - Shop Drawings, Product Data, and Samples.

Specified Item: Yes: No: (complete *Request for Substitution Information* below)

As the Contractor for this Project, we have thoroughly checked this submittal and ascertained that this submittal complies in detail with the Contract Documents (as required in Section 01 33 23 - Shop Drawings, Product Data, and Samples). Prior to submission, we have reviewed, marked-up as appropriate, and stamped this submittal. The submittal clearly shows that we have clearly reviewed this submittal for conformance with the requirements of the Contract Documents and for coordination with other Sections. We have determined and verified; field measurements, field construction criteria, catalog numbers and similar data, conformance with Contract Documents.

Contractor Date

[PROJECT NAME]

UNIVERSITY OF CALIFORNIA, SANTA CRUZ

Project No. [NUMBER]

[ISSUE DATE]

REQUEST FOR SUBSTITUTION

Proposed Substitution: _____

Manufacturer: _____

Product (model, pattern, etc.): _____

State the reason for the Proposed Substitution:

- The specified item is unavailable (certified letter from manufacturer/supplier is attached).
- Significant Time Reduction. Estimated Calendar Day Reduction: _____ Calendar Days
- Significant Cost Reduction. Estimated Reduction in Contract Sum: \$ _____
- Significant improvement in quality without a change in Contract Sum.

Provide comparison information and supporting data substantiating the request.

EFFECTS OF PROPOSED SUBSTITUTION: Answer the following questions and attach explanations.

Does substitution affect dimensions indicated on Drawings?

NO YES, explain:

Does substitution affect Work of other Sections?

NO YES, explain:

Does substitution affect sustainability requirements as specified?

NO YES, explain:

Does substitution require modifications to design, changes to Drawings, or revisions to specifications to be incorporated into the Project?

NO YES, explain:

Attach list of at least 3 projects where proposed substitution has been used within past 12 months; include name, address, and telephone number of Owner and Architect.

CONTRACTOR'S / BIDDER'S REPRESENTATION

Undersigned accepts responsibility for coordination of proposed substitution and accepts all additional costs resulting from the incorporation of proposed substitution into the Project.

SUBMITTED BY:

For Design Team's use:

Accepted Not Accepted

No Action Required

Submission: Incomplete

Too Late

Reviewed by/date: _____

Comments: _____

Subcontractor's signature and date: _____

END OF SECTION 01 25 00

SECTION 01 26 10

REQUEST FOR INFORMATION (RFI) PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section contains the procedures to be followed by the Contractor upon discovery of any apparent conflicts, omissions, or errors in the Contract Documents or upon having any question concerning interpretation.

1.2 PROCEDURES

A. Notification by Contractor.

1. Submit all requests for clarification or additional information in writing to The University's Representative using a Request for Information (RFI) form as acceptable to The University's Representative. A blank sample form is available upon request.
2. Number RFIs sequentially. Follow RFI number with sequential revision number suffix as necessary for each resubmission. For example, the first RFI would be "001." the second RFI would be "002." The first re-submittal of RFI "002" would be "002-R1."
3. Limit each RFI to one (1) subject.
4. Submit an RFI if one of the following conditions occurs:
 - a. The Contractor discovers an unforeseen condition or circumstance that is not described in the Contract Documents.
 - b. The Contractor discovers an apparent conflict or discrepancy between portions of the Contract Documents that appears to be inconsistent or cannot be reasonably inferred from the intent of the Contract Documents.
 - c. The Contractor discovers what appears to be an omission from the Contract Documents that cannot be reasonably inferred from the intent of the Contract Documents.
5. RFIs will not be recognized or accepted if, in the opinion of The University's Representative, one of the following conditions exists:
 - a. The Contractor submits the RFI as a request for substitution.
 - b. The Contractor submits the RFI as a submittal.
 - c. The Contractor submits the RFI under the pretense of a Contract Documents discrepancy or omission without thorough review of the Contract Documents.
 - d. The Contractor submits the RFI in a manner that suggests that specific portions of the Contract Documents are assumed to be excluded or by taking an isolated portion of the Contract Documents in part rather than whole.
 - e. The Contractor submits an RFI in an untimely manner without proper coordination and scheduling of Work of related trades.
6. Ask for any clarification or request for information immediately upon discovery. Submit RFIs in a reasonable time frame so as not to affect the Contract Schedule while allowing the full response time described below.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION

3.1 SUBMISSION REQUIREMENTS

- A. Submit all RFI's via email to University Representative and Cc constdoc@ucsc.edu. Email should include the UCSC project number as well as the RFI number in the subject line.
- B. The Contractor shall submit RFI's as an electronic file in Portable Document Format (PDF) with Optical Character Recognition (OCR).
- C. Approved RFI's will be sent to the Contractor, PPDO Contracts Office, Building Inspector, Design Team, University Representative and archived in the project folder.

3.2 RESPONSE TIME

- A. The University's Representative, whose decision will be final and conclusive, shall resolve such questions and issue instructions to the Contractor within a reasonable time frame. In most cases, RFIs will receive a response within ten (10) working days. In some cases, this time may need to be lengthened for complex issues, or shortened for emergency situations, as mutually agreed in writing.
- B. Should the Contractor proceed with the Work affected before receipt of a response from The University's Representative, within the response time described above, any portion of the Work which is not done in accordance with The University's Representative's interpretations, clarifications, instructions, or decisions is subject to removal or replacement and the Contractor shall be responsible for all resultant losses.
- C. Failure to Agree. In the event of failure to agree as to the scope of the Contract requirements, the Contractor shall follow procedures set forth in Article 4 of the General Conditions.

END OF SECTION 01 26 10

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 APPLICATION FOR PAYMENT

- A. Make application for payments using The University's Standard form in accordance with Article 9 of the General Conditions.

1.2 FEES FOR TESTING AND INSPECTIONS BY THE UNIVERSITY'S GEOTECHNICAL ENGINEER

- A. See Section 01 45 00 - Quality Control.

1.3 CHANGE ORDER PROCEDURES

- A. The following procedures will be followed in processing Change Orders:
 1. See General Conditions, Article 4, Administration of the Contract.
 2. See General Conditions, Article 7, Changes in the Work.
 3. The Contractor shall submit three (3) copies of the Contractor's cost breakdown (cost proposal) to The University's Representative including any effect to the Contract Time.
 4. If approved by The University's Representative (items involving cost additions or deductions, and Contract Time), The University's Representative will prepare a Change Order using The University's standard form and return that form to the Contractor for signature.
 5. The Contractor shall return all copies (with signature) to The University's Representative for execution by The University's Representative and The University.
 6. The University will formally distribute copies of the Change Order after execution by The University.
 7. Said Change Order shall not be valid until executed by The University and a copy returned to the Contractor by The University.
 8. The Contractor shall not proceed with any changes or additions to the Work without written authorization from The University in the form of a Change Order or Field Order.
 9. If approved by The University, "priority work items" may be pursued by the Contractor upon receipt of a Field Order issued by The University to be followed up by inclusion in a Change Order.

1.4 FIELD ORDERS

- A. See General Conditions, Article 7.4

1.5 PROVISIONS FOR WEATHER-RELATED DELAYS

- A. This provision specifies the procedure for determining time extensions for unusually severe weather conditions in accordance with the General Conditions. The list below defines the monthly

anticipated adverse weather conditions for the Contract period and is based upon NOAA or similar data for the geographic location of the Project.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
(11)	(11)	(10)	(6)	(4)	(2)	(1)	(1)	(2)	(4)	(8)	(11)

- B. The above schedule of anticipated adverse weather will constitute the base line for monthly (or portion thereof) weather time evaluations. Upon acknowledgment of the Notice to Proceed and continuing throughout the Contract on a monthly basis, actual adverse weather days will be recorded on a calendar day basis (including weekends and holidays) and compared to the monthly anticipated adverse weather in subparagraph A, above. For purposes of subparagraph B, the term actual adverse weather days shall include days impacted by "actual adverse weather days."
1. The number of actual adverse weather days shall be calculated chronologically from the first to the last day in each month. Once the number of actual adverse weather days anticipated in subparagraph A, above, have occurred, The University's Representative will examine any subsequently occurring adverse weather days to determine whether the Contractor is entitled to an extension of Contract Time. These subsequently occurring adverse weather days must prevent Work for 50 percent or more of the Contractor's work day and delay work critical to the timely completion of the Project. Delayed work must be shown on the Contract Schedule or Schedule Update in effect at the time of the adverse weather. The University's Representative will convert any delays meeting the above requirements to calendar days and grant an extension of time as provided in Article 8 of the General Conditions.
- C. The Contractor's Contract Schedule must reflect the above anticipated adverse weather delays on all weather-dependent activities.
- D. The number of adverse weather days detailed in this Section shall not relieve Contractor of the responsibility to schedule and/or protect the Work in place (and stored materials) from wind and water damage.

1.6 SUSTAINABLE CONSTRUCTION VALIDATION

- A. The following items shall accompany the application for payment:
1. Schedule of Values.
 2. Contractor's Contract Construction Schedule
 3. Logs of sustainable project material and cost data.
 4. LEED Action Plan
 5. Unit Prices
 6. Submittal Schedule

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 29 00

SECTION 01 31 13

PROJECT COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

Contractor shall:

- A. Coordinate all Work with The University.
- B. Coordinate the Work and do not delegate responsibility for coordination to any subcontractor.
- C. Anticipate the interrelationship of all subcontractors and their relationship with the Work.
- D. Resolve differences or disputes between subcontractors concerning coordination, interference, or extent of the Work between Sections.
- E. Coordinate the Work of subcontractors and material suppliers so that portions of the Work are performed in a manner that minimizes interference with the progress of the Work.
- F. Do not obstruct spaces and installations that are required to be clear by applicable code requirements including access to valves, motors, control actuators, fire/smoke damper actuators, volume dampers, access door swings, or other devices that may need to be serviced, inspected or replaced.
- G. Do not cover any piping, wiring, ducts, or other installations until they have been inspected, approved, and the required certificates of inspection have been issued.
- H. 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.
- I. Coordinate all portions of the mechanical, plumbing, electrical, controls and other Work requiring careful coordination in order to fit in space available.
- J. Provide BIM modeling of building, including clear spaces for code requirements and maintenance clearances. Also, provide modeling of site underground utilities.

1.2 PROJECT COORDINATION

- A. Meetings: Refer to Section 01 31 19 - Project Meetings.
- B. Submittals: Refer to Section 01 33 00 - Submittal Procedures, and Section 01 33 23 - Shop Drawings, Product Data, and Samples.
- C. Contract Close-Out: Refer to Section 01 77 00 - Closeout Procedures.
- D. Cutting and Patching: Refer to Section 01 73 29 - Cutting and Patching.

- E. Correspondence: Clearly identify correspondence with Project name, number, subject and detailed reference to relevant Drawings and Specifications. Details of distribution will be determined at Preconstruction Conference; refer to Section 01 31 19 - Project Meetings.

1.3 MECHANICAL, PLUMBING, ELECTRICAL, CONTROLS, AND RELATED SYSTEMS COORDINATION

- A. Prior to proceeding with the work, and before installation, coordinate and work out all "tight" conditions involving work of various Sections. For the purposes of this section the term "tight" conditions shall be defined as a space where the design intent is to install more than one utility (i.e.: ductwork, piping, conduits, controls, etc.), including underground site utilities, in a restricted or confined space such that their convergence may interfere each other, or with necessary maintenance or code required clearances, or restrict their repair or modification in the future. Before work proceeds in these areas, prepare supplemental drawings for review by The University's Representative (refer to Section 01 33 00 - Submittal Procedures). Provide all work necessary to coordinate tight conditions including supplemental drawings in sufficient detail for showing that all work is coordinated in "tight" areas, and additional labor and materials necessary to overcome "tight" conditions at no increase in Contract sum or Contract time. Coordination of "tight" conditions shall include:
 - 1. Providing sufficient clear space around all equipment necessary for maintenance access and as required by Code; and
 - 2. Adjustments in depth, position, and elevation of underground and overhead utilities at points of conflict. Utility space conflicts shall be resolved by giving precedence to those utilities which are called out to be sloped. The term "utility" as used in this paragraph includes: all piping, conduit, and ductwork.
 - 3. Note that adjustments in utilities may not intrude into any tree protection or other environmental protection zone identified on construction drawings without prior written approval by the University's Representative.

1.4 INTERRUPTION OF SERVICE

VERIFY TIME AND UTILITY DISRUPTION IS APPROPRIATE FOR PROJECT.

- A. Any utility (including electronic system) interruptions shall be coordinated with The University, via The University's Representative. A draft listing and schedule of systems to be shutdown is to be submitted to the University Representative not later than **14 days** after issuance of the Notice to Proceed. At least ninety (90) day preliminary written notice shall be given prior to any utility interruption. Final written notice, on University supplied form, shall be given a minimum of seven (7) working days in advance of utility interruption. Any interruption of utility service will be made by The University upon such notice. The Contractor shall not interrupt any utility service.
- B. All materials and supplies for completing the connection and restoring service shall be on hand before service is interrupted. Service interruptions shall be limited to eight (8) hour durations. The Contractor shall not leave the Project site until service is restored each day.
- C. Any traffic interruptions shall be coordinated with The University, via The University's Representative. A draft listing and schedule of road/ walkways to be shutdown is to be submitted to the University Representative not later than **14 days** after issuance of the Notice to Proceed. At least ninety (90) day preliminary written notice shall be given prior to any traffic interruption. Final written notice, shall be given a minimum of fourteen (14) working days in advance of traffic interruption. Any interruption of traffic will be made by The University upon such notice. The Contractor shall not interrupt any traffic route otherwise.

1.5 CUTTING AND PATCHING

- A. The Contractor shall be responsible for the coordination and final results of all cutting and patching. Cutting shall be done neatly. Patching shall be of the same material and workmanship as the surrounding finish so that in the final results the patch is not visible. Where pipes, ducts, or other elements are required to pass through or otherwise interfere with any structure, or where notching, boring, cutting, or patching of said structure is necessary, the work shall be done only after The University's Representative's approval has been obtained. Refer to section 01 73 29 - Cutting and Patching.

EDIT BELOW IF APPROPRIATE FOR PROJECT.

- B. The Contractor shall coordinate with the University Representative prior to cutting or disturbing any existing wall or ceiling surface, including sheetrock or tile, or existing piping or ductwork insulation to determine if asbestos abatement may be required first.

1.6 NOXIOUS OR TOXIC MATERIALS

- A. The use of noxious or toxic materials for all applications in alterations of work in or adjacent to buildings occupied by The University's personnel shall be done only after submittal of product Material Safety Data Sheets (MSDS), proper notification to and approval of The University, via The University's Representative, who may also require that such work be performed on the weekends or other unoccupied days. Such notice shall be given to The University, in writing, via The University's Representative, a minimum of five (5) working days in advance of said use.

1.7 NOISE ABATEMENT

EDIT BELOW IF APPROPRIATE FOR PROJECT. DELETE IF NOT REQUIRED.

- A. Offices, classrooms, laboratories, and other facilities surround the Project area and will be occupied during the course of construction. Every effort shall be made to minimize excessive levels of noise, particularly over prolonged periods of time. Scheduling of particularly noisy construction operations shall be coordinated with The University, via The University's Representative.
- B. Powder-actuated anchors and fasteners may be used if approved, and where directed by The University's Representative. Blasting of any description is strictly prohibited on any portion of the work of this contract.
- C. Use of radio or other music amplification devices will not be permitted on the Project site.
- D. Prior to initiation of construction, the Contractor shall develop a Construction Noise Mitigation Program for the project, which must be approved by the University's Representative prior to the start of construction. Refer also to Section 01 50 00 - Temporary Facilities and Controls.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 31 13

SECTION 01 31 19

PROJECT MEETING

PART 1 - GENERAL

1.1 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify the University's Representative and Architect of scheduled meeting dates and times.
 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes: **ENTER [ENTITY RESPONSIBLE FOR CONDUCTING MEETING]** *Example: Contractor* shall conduct meeting, record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, within three (3) working days of the meeting.

1.2 PRECONSTRUCTION CONFERENCE

- A. Prior to mobilization or the commencement of any work on the Project site, and not later than fourteen (14) days after issuance of the Notice to Proceed, a preconstruction conference will be scheduled. The preconstruction conference will be conducted by The University's Representative to discuss timing procedures for smooth job progress, items requiring clarification, distribution of documents and correspondence with The University and The University's Representative, and other procedures which are to be followed during performance of the Work.
- B. Location: On the University of California, Santa Cruz campus, designated by The University's Representative.
- C. Attending shall be:
1. The University's Representative
 2. The University's Inspector
 3. The University's Consultants and The University's Representative's Consultants, as appropriate
 4. Contractor
 5. Contractor's Project Manager
 6. Contractor's Superintendent
 7. Subcontractors, as appropriate
 8. Others, as appropriate
- D. Suggested Agenda:
1. Distribution and discussion of:
 - a. List of major subcontractors and suppliers
 - b. Projected construction schedules
 2. Critical work sequencing

3. Major equipment deliveries and priorities
4. Project coordination
5. LEED, CALGreen or other sustainable design requirements
6. Designation of responsible personnel
7. Procedures and processing of:
 - a. Field decisions
 - b. Submittals
 - c. Modifications (Change Orders and Field Orders)
 - d. Proposal Requests, Cost Proposals, Letters of Instruction
 - e. Applications for Payment
8. Adequacy of distribution of Contract documents
9. Procedures for maintaining Record Documents
10. Use of premises for:
 - a. Office, work, and storage areas.
 - b. The University's Representative's requirements.
11. Construction facilities, controls, and aids.
12. Temporary utilities
13. Temporary Tree protection procedures
14. Storm Water Pollution Prevention/Erosion and Sediment Control

1.3 PROGRESS MEETING

- A. During the course of construction, progress meetings will be held to discuss and resolve field problems. The Contractor shall schedule and administer weekly progress meetings and specially called meetings throughout progress of the Work.
 1. The Contractor shall:
 - a. Prepare agenda for meetings
 - b. Make physical arrangements for meetings
 - c. Preside at meetings
 - d. Record minutes, including significant proceedings and decisions. Items not concluded will be retained on the agenda and in the minutes until conclusion is recorded in subsequent minutes. Format of the minutes shall be as mutually agreed upon by the Contractor and the University's Representative.
 - e. Reproduce and distribute copies of minutes within four (4) working days after each meeting to participants in meeting and to parties affected by decisions made at meeting.
 2. Representatives of Contractor, subcontractors and suppliers attending meeting shall be qualified and authorized to act on behalf of entity each represents.
- B. The weekly time and day of job meetings shall be mutually agreed upon by all parties concerned and once determined the job meeting shall be held every week on the same day and at the same time.
- C. Location: As designated by The University's Representative.
- D. Attending shall be:
 1. The University's Representative
 2. The University's Inspector

3. The University's Consultants and The University's Representative's Consultants, as appropriate
4. Contractor
5. LEED, CALGreen or other sustainable design Representative
6. Contractor's Superintendent and Project Manager
7. Subcontractors, as appropriate
8. Others, as appropriate

1.4 BILLING MEETING

- A. A billing meeting shall be conducted by the Contractor each month prior to submittal of the Application for Payment.
- B. Location: As designated by The University's Representative.
- C. Attending shall be:
 1. The University's Representative
 2. The University's Consultants and The University's Representative's Consultants, as appropriate.
 3. The University's Inspector
 4. Contractor
 5. Contractor's Project Manager

1.5 OTHER MEETINGS AND PREINSTALLATION CONFERENCES (AS REQUIRED IN OTHER SECTIONS OF THE SPECIFICATIONS)

- A. A pre-installation meeting shall be conducted by the Contractor as required in other Sections of the specifications. These meetings are to insure coordination and installation of components are completed in accordance with the Contract documents.
- B. Location: As designated by The University's Representative.
- C. Attending shall be:
 1. The University's Representative
 2. The University's Consultants and The University's Representative's Consultants, as appropriate
 3. The University's Inspector
 4. Contractor
 5. Contractor's Project Manager
 6. Contractor's Superintendent
 7. Other subcontractors, installers, suppliers, and manufacturers, as specified

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

- A. Eleven (11) months following the date of Substantial Completion, a meeting shall be conducted by The University for the purpose of reviewing the guarantees, bonds, and service and maintenance contracts for materials and equipment.
- B. Attending shall be:
 1. The University's Representative

2. The University's Consultants and The University's Representative's Consultants, as appropriate
3. Appropriate Members from University's Physical Plant
4. Contractor
5. Subcontractors, as appropriate
6. Others, as appropriate

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 31 19

DRAFT

SECTION 01 32 16

PROGRESS SCHEDULES

PART 1 - GENERAL

1.1 SUBMITTALS

A. Submittal Schedule

1. Submit the **Preliminary Network Diagram** at the Preconstruction Conference.
2. Submit the **Preliminary Contract Schedule** to the University's Representative within twenty-one (21) calendar days after the date of commencement specified in the Notice to Proceed.
3. Within ten (10) calendar days after receipt of the Preliminary Contract Schedule, The University's Representative will review the **Preliminary Contract Schedule** and notify Contractor of its acceptance. The University's Representative will provide comments, suggested changes, and revisions, so that appropriate adjustments may be made by Contractor in the development of the Contract Schedule.
4. Prior to twenty-one (21) calendar days before submitting the first Application for Payment, and after receipt of The University's Representative's comments, Contractor shall submit the **Contract Schedule**, after incorporating the changes and revisions.
5. Within twenty-one (21) calendar days after receipt of proposed **Contract Schedule**, The University's Representative may accept Contractor's Contract Schedule. The Contract Schedule will then be used to monitor the Work. In case of rejection, Contractor must resubmit.
6. No Application for Payment will be processed nor shall any progress payment become due until the Contract Schedule is accepted by The University's Representative. Due to the fact that the Contract Schedule may not be accepted for forty-five (45) calendar days after the Notice to Proceed, Contractor may be due Provisional Progress Payment(s) on work performed, based on Contractor's Preliminary Contract Schedule. Contractor shall be responsible for providing cost information for activities for which progress payment is requested.
7. The submission of monthly updates of the Contract Schedule shall commence the calendar month following the month. The University's Representative accepted the Contract Schedule.
8. Network Plots shall be time scaled network diagrams showing all activities and their relationships. Display on a sheet of stable transparency or other reproducible media of sufficient width to show dates clearly for the full construction period.
 - a. Mark the critical path. Locate the critical path near the center of the network, and locate paths with the most float near the edges.
9. Four (4) schedule reports/sorts shall be provided and shall include all activities as follows: activities in activity number order, logic, float, and early start.

10. Prepare and submit samples of reports/sorts as part of the submission of Preliminary Network Diagram.
11. Post copies of the Preliminary Contract Schedule and The Contract Schedule in a prominent location in Project meeting rooms and temporary field offices.
12. When updates are made, distribute updated schedules to subcontractors and post in the same locations noted above. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.2 FORM

- A. All Preliminary Contract Schedules, the Recovery Schedules, Update Progress Schedules, Change Order Fragnet Schedules, and As-Built Schedules shall be prepared utilizing Primavera SureTrak Version (latest version for Windows), or Primavera Project Planner (latest version for Windows), or equal (no known equal) which is 100% compatible with Primavera.
- B. No activity on the Preliminary Contract Schedule and the Contract Schedule shall have duration longer than fifteen (15) calendar days, except fabrication and procurement activities, which may have longer durations if acceptable to The University's Representative.
- C. Milestone activities showing the point of substantial completion and final completion for each stage of the work, if designated in the Contract Documents, shall be included in The Preliminary Contract Schedule, Contract Schedule, and updates.
- D. An activity for "mobilization" shall be provided which includes preparatory work and operations, including, but not limited to, those necessary for movement of personnel, equipment, supplies and incidentals to Project site, for establishment of all temporary field offices, buildings and other temporary facilities necessary for work on the Project, and for all other work and operations which must be performed or costs incurred prior to beginning work of the various items on the Project site.
- E. Submit one (1) digital copy of the complete program file in PDF and XER format.
- F. Submit a separate procurement log as part of the Contract Schedule. This procurement log shall, at a minimum, include the following information for each type of material or equipment provided under this Contract:
 1. Material or equipment description.
 2. Technical specification reference.
 3. Dates that submittals will be issued to The University's Representative.
 4. Duration in days required for preparation of submittals and resubmittals (reference Section 01 33 00 - Submittal Procedures).
 5. Duration in days required for the duration on The University's Representative's review.
 6. Duration in days required for fabrication and delivery.
 7. Cross reference to all activities by activity number on Contract Schedule.
 8. Scheduled delivery dates.
- G. Submit a separate utility shut-down schedule which provides anticipated dates when utilities will need to be shut-down to allow for tie-in to existing services. Incorporate these dates into the Preliminary Network Diagram Submittal, Preliminary Contract Schedule and the Contract Schedule.
- H. Activities on Contract Schedule that are dependent on submittal acceptance and/or material delivery shall not be scheduled to start earlier than the expected acceptance or delivery dates.

- I. On-site production activity durations shall be the total of the actual days required to perform that activity. Do not include non-production time.
- J. Assign each activity a responsibility code corresponding to the subcontractor responsible for performing the work so that schedule activity lists and cost subtotals can be generated for each division of work.
- K. Use one calendar day as the unit of time.
- L. Maintain the same logic on all schedules as originally accepted, unless otherwise agreed by The University's Representative.

PART 2 - PRODUCTS

2.1 PRELIMINARY NETWORK DIAGRAM SUBMITTAL

- A. Submit a Preliminary Network Diagram outlining activities for the first forty-five (45) days of construction at the Preconstruction Conference.
 - 1. Include a skeleton diagram for the remainder of the Work with the preliminary diagram, indicating possible critical paths.
 - 2. Show each significant construction activity, including but not limited to:
 - a. Utility shutdowns
 - b. Underground utility completion
 - c. Mockup construction and review
 - d. Foundation completion
 - e. Structural frame completion
 - f. Shell completion
 - g. Utility connections
 - h. Site work completion
 - i. Punch list preparation
 - j. All holidays and non-working days
 - k. Campus calendar student break periods
 - 3. Pay particular attention to activities requiring early mobilization, including but not limited to:
 - a. Submittals
 - b. Utility connections
 - c. Utility tunnel or trench
 - d. Mock-ups
 - 4. Include a separate tabulation of submittals by date of submittals required during the first ninety (90) days of construction. List those required to maintain orderly progress of the Work, and those requiring early review because of long lead time for manufacture, fabrication, or delivery to site.
 - 5. Distribute the Preliminary Network Diagram to all parties that need to know about the construction activities that are scheduled early, including subcontractors and The University's Representative.
- B. The Preliminary Network Diagram shall be a feasible, workable, and reasonable schedule for the Work, and will serve as the basis for development of the Preliminary Contract Schedule and the Contract Schedule.

2.2 PRELIMINARY CONTRACT SCHEDULE

A. Form:

1. The Preliminary Contract Schedule shall be a CPM, time-scaled network diagram showing continuous flow from left to right.
2. The Preliminary Contract Schedule should show sufficient detail to demonstrate adequate preliminary planning for the Work, describe Contractor's plan of construction, and to represent a practical plan to complete the Work within the Contract Time.
3. Identify the following milestone events on the Preliminary Contract Schedule, and coordinate with identified construction phases:
 - a. Mobilization Complete
 - b. Utility Shutdowns
 - c. Mock-up Complete (list each mock-up separately)
 - d. Erosion Control Complete (for each season as required)
 - e. Date Major Submittals Submitted (list each one separately)
 - f. Submittal Process Complete for Entire Project
 - g. Date(s) When Delivery of University Furnished Items are required
 - h. Notice Rough Punchlist Inspection for uninsulated piping or ductwork
 - i. Commissioning
 - j. System Testing and Balancing Complete for Entire Project Notice Punchlist Inspection
 - k. Substantial Completion
 - l. Final Completion/Contractual Completion Date
4. Identify all holidays and non-working days on the Preliminary Schedule.
5. The Contract Schedule shall be shown on more than one (1) sheet. Provide a one (1) page summary of the sheets.

B. Activities:

1. Identify all work activities which constitute the critical path.
2. The Preliminary Contract Schedule shall include, but not be limited to, separate work activities for each level, including roof(s), for each of the following areas, or component, of the Project:

[DESCRIPTION]

The Preliminary Contract Schedule shall include, but not be limited to, the following work activities:

... THE FOLLOWING IS FOR EXAMPLE ONLY, BUT PROVIDES A GUIDE FOR THE LEVEL OF DETAIL AND KEY ACTIVITIES REQUIRED ...

- Mobilize*
- Scaffolding*
- Lay-out Site*
- Connect Temporary Utilities*
- Clear and Grub*
- Demolition (in existing facilities)*
- Mass Excavation*
- Shoring*
- Erosion Control*
- Rough Grading*
- Compaction*

Trench and Backfill
Foundation
Asphaltic Concrete Paving
Site Work and Site Improvements
Pavement Marking
Site Concrete
Joint Filler & Sealants
Storm Drain Lines
Subsurface Drainage Materials
Precast Manholes and Utility Vaults
Underground Irrigation System
Finished Grading
Landscape Work
Concrete Work
Unit Masonry
Structural Steel
Steel Joists and Joist Girders
Metal Decking
Cold-Formed Metal Framing
Metal Fabrications
Tension Wire Grid Understructure
Rough Carpentry
Finish Carpentry
Interior Architectural Woodwork
Sheet Waterproofing System
Building Insulation
Roof Insulation
Sprayed-On Fireproofing
Firestopping
Built-up Roofing
Flashing and Sheet Metal
Roof Specialties and Accessories
Aluminum Canopy Skylights
Joint Sealers
Metal Doors and Frames
Fire Rated Metal Wall
Wood Doors and Frames
Access Doors
Overhead Coiling Doors
Sound Retardant Hollow Metal Door Systems
Sound Retardant Wood Door Systems
Aluminum Entrances and Storefronts
Aluminum Windows
Finish Hardware
Glass and Glazing
Translucent Wall and Skylight System
Metal Support Systems
Lath
Plaster
Gypsum Board
Gypsum Sheathing
Acoustical Panel Ceilings
Acoustical Wall Panels
Resilient Wood Strip Flooring
Resilient Flooring
Carpeting
Interior Painting

*Exterior Painting
Chalkboards, Markerboards, and Tackboards
Toilet Partitions
Signs
Fire Extinguishers, Cabinets, & Accessories
Toilet Room Accessories
Theatrical Rigging Systems
Theatrical Draperies
Audio/Video Systems
Projection Screens
Tension Wire Grid
Horizontal Louver Blinds
Motorized Blackout Shades
Loading Dock Equipment
Auditorium and Theater Seating
Floor Slab Sound & Vibration Control System
Elevators & Wheelchair Lifts
Trolley Hoists
Misc. Supports and Anchors
Mechanical Painting
Pipes and Pipe Fittings & Valves
Pipe Supports Seismic Engineering
Pipe Supports
Vibration Isolation and Flexible Connections
Mechanical Insulation
Automatic Fire Protection Sprinklers
Plumbing Fixtures
Plumbing Equipment
Heating Equipment
Cooling Equipment
Air Handling Equipment
Shop Drawings for Plumbing, HVAC Piping and Duct Systems
Duct Work
Duct Work Accessories
Power and Gravity Ventilators
Grilles, Registers, and Diffusers
Testing, Adjusting, and Balancing
Raceways and Fittings
Wire and Cables - Install
Electrical Boxes and Fittings
Electrical Conductors
Electrical Relays and Contactors
Electrical Wiring Devices
Electrical Cabinets and Enclosures
Underground Ductbanks
Switchboards
Transformers
Panelboards
Motor Control
Interior Lighting Fixtures
Exterior Lighting Fixtures
Site Lighting Fixtures
Fire Alarm System
Temperature Control System
Communication Systems
Final Cleanup
Contractor's Punch List*

*The University's Punch List
Contract Completion*

2.3 CONTRACT SCHEDULE

- A. The Contract Schedule shall expand and refine the Preliminary Contract Schedule.
- B. Form:
 - 1. The Contract Schedule shall be a CPM, time-scaled network diagram showing continuous flow from left to right.
 - 2. The Contract Schedule should show sufficient detail to describe Contractor's plan of construction, and to represent a practical plan to complete the Work within the Contract Time.
 - 3. Identify the following milestone events on the Contract Schedule, including but not limited to:
 - a. Mobilization Complete
 - b. Mock-up Complete (list each mock-up separately)
 - c. Erosion Control Complete (for each season as required)
 - d. Date Major Submittals Submitted (list each one separately)
 - e. Submittal Process Complete for the entire Project
 - f. Dates of Utility Shutdowns
 - g. Date(s) When Delivery of University Furnished Items are required
 - h. System Testing and Balancing Complete for Entire Project
 - i. Commissioning
 - j. Notice Punchlist Inspection
 - k. Substantial Completion
 - l. Final Completion/Contractual Completion Date
 - 4. Identify all Holidays and non-working days on the Contract Schedule.
 - 5. Include days for weather-related delays. Refer to Section 01 29 00 - Payment Procedures
 - 6. The Contract Schedule shall be shown on more than one (1) sheet. Provide a one (1) page summary of the sheets.
- C. Activities:
 - 1. Identify all work activities in proper sequence for the completion of the Work. Work activities shall include the following:
 - a. Major Contractor-furnished equipment, materials, and building elements, and scheduled activities requiring submittals or The University's prior approval.
 - b. Show dates for the submission and The University's Representative's review and approval for each submittal. Dates shall be shown for the procurement, fabrication, delivery, and installation of major equipment, materials, and building elements, and for scheduled activities designated by The University's Representative in the review of the Preliminary Schedule.
 - c. Twenty-five (25) calendar days shall be allotted for The University's Representative to review each submittal and each resubmittal.
 - d. System test dates.
 - e. Scheduled overtime work
 - f. Contractor's Required Testing and Inspection.
 - g. Dates Contractor requests designated working spaces, storage areas, access, and other facilities to be provided by The University.
 - h. Dates Contractor requests orders and decisions from The University on designated items.

- i. Dates Contractor requests The University-furnished equipment (delivery at Project site).
 - j. Dates Contractor requests The University-furnished utilities (available for connection).
 - k. Connection and relocation of existing utilities.
 - l. Connecting to or penetrating existing structures.
 - m. Provisions for weather-related delays as per Section 01 29 00 - Payment Procedures.
 - n. Dates Contractor requires information from The University regarding bid allowances, and dates when the work related to bid allowances will be incorporated into the Work.
 - o. Commissioning
 - p. Schedule ten (10) working days following accepted request for final inspection for The University's Representative to prepare the list of items to be corrected (punchlist). Schedule twenty-five (25) working days for completion of the items to be corrected (reference Section 01 77 00 - Closeout Procedures).
2. The Contract Schedule shall include, but not be limited to, separate work activities for each level, including roof(s), for each of the following areas or component of the Project:

[DESCRIPTION]

The Contract Schedule shall include, but not be limited to, the following work activities (not necessarily in order listed):

... THE FOLLOWING IS FOR EXAMPLE ONLY, BUT PROVIDES A GUIDE FOR THE LEVEL OF DETAIL AND KEY ACTIVITIES REQUIRED ...

- Mobilize*
- Layout*
- Scaffolding*
- Shrink Wrap*
- Exterior Demolition*
- Remove Plaster*
- Shoring*
- Remove Deteriorated Structural Members*
- Remove Portion of Elevated Decks*
- Jackhammer Concrete Walkways*
- Interior Demolition*
- Remove Casework/Finishes*
- Remove Shower Pans/Fixtures*
- Remove Selective Drywall*
- Replace Structural Members*
- Remove/Replace Sheathing*
- Replace Windows*
- Reinstall Doors*
- Weather proof*
- Install Building Paper*
- Install Flashing*
- Lath*
- Plaster*
- Roof Repairs*
- Repair Parapets*
- Repair Vents/Jacks*
- Repair Built Up Roofs*
- Repair Roof Shingles*
- Shower Repairs*

Install Piping
Replace Subfloor
Install Hardie Backer
Install Green-Board
Install Shower Pans/Tubs
Install Fixtures
Mechanical Repairs
Repair Leaking Ducts
Repair Leaking Pipes
HVAC Balancing
Finishes
Install Drywall/Tape/Mud
Paint Interior
Replace Flooring
Replace Casework
Elevated Decks
Modify Deck
Place Concrete Topping Slab
Flatwork
Install Reinforcement
Place Concrete Walkway
Remove Shrink Wrap
Remove Scaffolding
Landscaping
Install Irrigation
Install Plants
Communication System - Rough-in
Communication System - Install
Communication System Trim
Communication System – Telephone/Data Jack Identification
Training – per Each Division
Commissioning (including site electrical, site telecom/date, building mechanical, building electrical, building life-safety and building security)
Final Cleanup
Contractor's Punch List
The University's Punch List
Contract Closeout Documentation
Contract Completion

3. Identify all work activities that constitute the critical path.
4. Critical work activities are defined as Work activities which, if delayed or extended, will delay the scheduled completion of one or more of the milestones specified in this Section or the Contract completion date, or both. All other Work activities are defined as non-critical Work activities and are considered to have float.
5. Float is defined as the time that a non-critical Work activity can be delayed or extended without delaying the contractual completion of milestones specified in this Section or the contractual completion of the Project or both. Neither Contractor nor The University shall have an exclusive right to the use of float. The party using float shall document the effect on the updated Contract Schedule.
6. Delays of any non-critical Work activity shall not be the basis for an extension of Contract Time until the delays consume the float associated with that non-critical Work activity and cause the work activity to become critical.
7. 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.

3.1 MONTHLY UPDATES OF THE CONTRACT SCHEDULE

- A. Progress updates will be stasured as of the last day of each month.
- B. Within the first seven (7) working days of each month, Contractor shall submit to The University's Representative an up-to-date status report for the Contract and complete Contract Schedule Update. Status report shall include:
 - 1. Contractor's estimated percentage complete for each activity in progress.
 - 2. Actual start/finish dates for all activities shown on the Contract Schedule with all subsequent approved additions.
 - 3. List of materials and/or equipment delivered for which the Contractor is requesting payment and original invoice verifying cost.
 - 4. Identification of processing errors, if any, on the previous update reports.
 - 5. Revisions, if any, to the assumed activity durations including revisions for weather impact for any activities due to effect of previous update on the schedule.
 - 6. Network window of all proposed change orders issued during the update period.
 - 7. Resolution of conflict between actual work progress and schedule logic. When out of sequence activities develop because of actual construction progress, Contractor shall submit revisions to schedule logic to conform to current job status and directions, without changing Contract Schedule activity identification. Activity numbers will not be re-used. A new activity number will be used if an activity or scope of work is changed.
 - 8. A narrative report with the updated progress analysis, which shall include, but not be limited to, a description of problem areas, current and anticipated delaying factors and their impact, an explanation of corrective action taken and any proposed revisions for a recovery plan (refer to Paragraph 3.2 of this Section)
- C. Updating:
 - 1. Review the Contract Schedule with The University'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 The University's Representative an updated Contract Schedule once each month.
 - a. The updated Contract Schedule shall accurately represent the as-built condition of all completed and in-progress work activities as of the last date of the previous month.
 - b. The updated Contract Schedule shall incorporate all changes mutually agreed upon by Contractor and The University's Representative during preceding weekly 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 The University's Representative.
 - d. All updated Contract Schedules must continue to describe Contractor's plan of construction, and represent a practical plan to complete the Work in the Contract time.
 - e. Timely and accurate submission of a Time Impact Analysis by Contractor is hereby required. Any claim for delay by Contractor after The University's Representative has accepted an updated Contract Schedule is hereby waived.
 - 3. Contractor shall submit the updated Contract Schedule, in the form acceptable to The University's Representative, at least seven (7) working days prior to submitting the Application for Payment.

4. The University's Representative will determine acceptability of the updated Contract Schedule within ten (10) working days after its receipt.
5. No Applications for Payment will be processed nor shall any progress payments become due until an updated Contract Schedule is accepted by The University'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.
7. The Contractor hereby waives all rights to a claim for delay, in any month that Contractor fails to provide an updated Contract Schedule acceptable to The University's Representative.
8. The form shall be a CPM, time-scaled network diagram, matching the format of accepted Contract Schedule.

3.2 RECOVERY PLAN

- A. If Contractor is behind schedule by more than ten (10) calendar days for any stage of work, based on the updated Contract Schedule after incorporating all approved time extensions, Contractor shall submit to The University's Representative within five (5) working days of notification of such delay, a "Recovery Plan." The Recovery Plan shall be based on proposed revisions to Contract Schedule for the next sixty (60) calendar day period and shall show how Contractor intends to bring the work back on schedule. The Recovery Plan shall also include a written description of the measures that Contractor intends to take without additional cost to The University to regain schedule compliance. The Recovery Plan activities shall be identified according to their relationship to activities on the accepted schedule.
- B. Should Contractor fail to submit and execute such Recovery Plan, The University shall have the option to require Contractor to employ any or all measures that The University deems fit to regain schedule compliance without additional cost to The University.
- C. The Recovery Plan submitted by Contractor, upon acceptance by The University's Representative, shall be incorporated into the Contract Schedule during the next update.
- D. Contractor will be required to submit a Recovery Plan for each update that indicates that the work progress is more than ten (10) calendar days behind schedule.
- E. Should Contractor dispute the determination of The University's Representative regarding the status on Contract delay, such dispute shall not relieve the Contractor of the responsibility to comply with the requirements of this Section and other related Sections until the dispute is resolved per Article 4 of the General Conditions.

3.3 TIME IMPACT ANALYSIS FORMAT

- A. Any request for an adjustment of the Contract Time for completion submitted by Contractor for changes or alleged delays shall be accompanied by a complete "Time Impact Analysis," which shall be submitted for review with the request by Contractor. Time extensions will not be granted unless substantiated by the current updated Contract Schedule.
- B. Each Time Impact Analysis shall provide information justifying the request and stating the extent of the adjustment requested for each specific change or alleged delay. Each Time Impact Analysis shall be in form and content acceptable to The University's Representative, and shall include, but not be limited to, the following:
 1. A fragmentary CPM type network (Fragnet) illustrating how Contractor proposes to incorporate the change or alleged delay into the current updated Contract Schedule.

2. Identification of activities in the current updated Contract Schedule which are proposed to be amended due to the change, or alleged delay, together with engineering estimates and other appropriate data justifying the proposal.
 - C. The Time Impact Analysis shall be determined on the basis of the date or dates when the change or changes were issued, or the date or dates when the alleged delay or delays began. The status of the Project and Time Impact Analysis shall include event time computations for all affected activities.
 - D. The University's Representative will require that a Time Impact Analysis be provided in order to demonstrate the time impact upon the overall Project and the time for completion (and the associated costs to prepare the Time Impact Analysis is included in the contractor fee).
 - E. If University's Representative finds after review of the Time Impact Analysis that Contractor is entitled to any extension of time for completion, the time for completion will be adjusted by Change Order, and Contractor shall then revise the Contract Schedule accordingly.
 - F. When Contractor is behind schedule by more than ten (10) calendar days beyond adjusted Contract completion date(s) after incorporating all approved time extensions, requested schedule revisions shall be limited to activities scheduled for the next sixty (60) calendar day period immediately following the update that indicated the delay (refer to Recovery Plan).
 - G. When the University's Representative initiates changes by proposal request which have the potential to impact the Contract completion date, a network window shall be prepared by Contractor to reflect the impact of said changes. After network window has been mutually agreed upon, the time for completion will be adjusted by Change Order, and Contractor shall then revise the Contract Schedule accordingly.
- 3.4 DEFAULT
- A. Failure of Contractor to substantially comply with the requirements of this Section shall constitute reason that Contractor is failing to pursue the work with such diligence as will ensure its completion within the Contract Time, and shall be considered defective work, and The University reserves its rights under Article 12 of the General Conditions to remedy the work product.

END OF SECTION 01 32 16

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 TIMELY SUBMITTALS

- A. The Contractor shall have submitted the following data as required in these Specifications before request is made for first progress payment. Submittal of the following data shall be regarded as an essential part of the construction operation which is required before any progress payment will be made.
1. Schedule of Values, Cost breakdown, as specified in Article 9 of the General Conditions.
 2. Bill of Quantities for Materials, which shall itemize all materials for the Project correlated with each item in the cost breakdown.
 3. List of materials as specified herein.
 4. Schedule of submittals as described herein.
 5. Contract Schedule as described in Section 01 32 16 - Progress Schedules.
 6. Proposed Substitutions.
- B. Contractor may expect submittal turnaround in twenty-five (25) working days maximum for most submittals. Some submittals may take longer than twenty-five (25) working days depending on the volume and complexity of the submittals.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires University's Representative's responsive action. Action Submittals include the following:
1. Shop Drawings, Product Data, and Samples as described in Section 01 33 23 - Shop Drawings, Product Data, and Samples.
 2. Schedule of Values, Cost Breakdown as described herein.
 3. Submittals Schedule as described herein.
 4. Contract Schedule as described in Section 01 32 16 - Progress Schedules.
 5. Application for Payment as described in Section 01 29 00 - Payment Procedures.
- B. Informational Submittals: Written information that does not require University's Representative's responsive action. Submittals may be rejected for not complying with requirements. Informational Submittals include the following:
1. Progress reports as described herein
 2. Coordination drawings as described in Section 01 31 13 - Project Coordination
 3. Layout data as described herein
 4. Qualification data
 5. Welding certificates
 6. Installer certificates
 7. Manufacturer certificates
 8. Product and Material certificates
 9. Product and Material test reports

10. Research/Evaluation reports
11. Preconstruction and compatibility test reports
12. Field test reports
13. Maintenance data
14. Manufacturer's installation instructions
15. Manufacturer's field reports
16. Construction photographs and videotapes
17. Material Safety Data Sheets (MSDS)
18. As-Builts
19. Warranties / Guarantees
20. LEED submittals as required
21. CALGreen Submittals as required

1.3 PROGRESS REPORTS

- A. Daily Reports: The Contractor shall prepare a Daily Report for every working day giving brief particulars of work accomplished, number of workers employed for each trade, and weather conditions.
- B. Distribution: One (1) copy of the Daily Reports shall be transmitted to The University's Representative and constdocs@ucsc.edu no later than one (1) day after the day covered by the report. One (1) copy shall be delivered to The University's Inspector no later than 8:15 a.m. on the day after the day covered by the report.

1.4 SCHEDULE OF VALUES

- A. Provide cost breakdown of the Contract Price, itemizing estimated cost of each class of Work in accordance with General Conditions Article 9.
- B. Classes of Work should generally follow Specification Section designations although total agreement will not be required. This cost breakdown shall be in form to correlate with cost breakdown assigned to network activities.

PART 2 - PRODUCTS

2.1 LAYOUT DATA

- A. Submit scale plans, cross-sections and BIM in sufficient detail to show coordinated layout of all ducts, damper actuators, pipes, electrical work, access doors, above ceiling clearances, fume hoods, laboratory equipment and other related items. Plans, cross-sections and BIM shall be provided that include all underground ducts, electrical ductbanks, piping, and other underground utilities. Refer to Section 01 31 13 - Project Coordination.
- B. Engage professional computer aided draftsman to prepare these drawings to one-quarter scale on CAD and PDF's with title blocks to match the Contract Drawings.
 1. These plans shall reflect existing dimensions as field verified by the Contractor.
 2. Plans shall be uniform and identical and shall serve as backgrounds for preparation of shop or layout drawings required under all Divisions including, but not necessarily limited to, Divisions 21, 22, 23, 26, 27, and 33 and ultimately for recording of Record Drawings as-

built information required under these divisions. Refer to Division 01 77 00 - Closeout Procedures.

3. Where additional sheets of elevations, sections, details, and/or diagrams are required, such sheets shall match the Contract Drawings with respect to size and title block.
4. Prior to beginning excavation for structural footings and utilities, submit a coordination plan showing all underground utilities including; all underground piping, underground ductwork, electrical and communication ductbanks. The plan shall be a composite overlay of sheets each dedicated to a single underground utility using a common background and scale. Dimensions shall be sufficient to clearly indicate the position and depth of each utility relative to structural footings, above grade structures, and finished grade. At points where the plan indicates that utilities will cross each other, cross a structural footing, or run within six (6) feet parallel to either each other or a structural footing, provide a cross section drawing. Cross section drawings shall clearly show the relative positions and depths of each utility and structural footing. The composite plan and cross section drawing(s) shall be updated to "as-builts" and submitted with the Project Record (As-built) Drawings.

- C. Do not commence work until the University's Representative has reviewed these Drawings.
- D. Provide a PDF and CAD format of each submittal.

2.2 CONSTRUCTION PHOTOGRAPHS

- A. At least once per day, the Contractor shall photograph completed work as directed by The University's Inspector. Submit one (1) set of digital images on a weekly basis to The University via CD-ROM, email or FTP site. Transmit to the University Representative and constdoc@ucsc.edu.
- B. Photographs: Digital, color images, minimum 640 by 480 pixels on CD-ROM, email or FTP site. Provide annotation for images including, date, time and subject. A minimum of five (5) exterior views and five (5) interior views shall be included as part of submittal. An attempt should be made to keep consistent views throughout the Project.
- C. Contractor shall extensively photograph all piping, ductwork and electrical items that will be insulated or concealed behind permanent ceilings or walls.
- D. Prior to backfill, the Contractor shall extensively photograph all underground piping and utilities.

2.3 SCHEDULE AND FORM OF SUBMITTALS

- A. Schedule: Within thirty-five (35) days after the date of commencement specified in the Notice to Proceed, submit schedule of submittals required under Divisions 1 through 48. Schedule shall list submittals and indicate date submittal will be made.
- B. Form:
 1. Number each submittal as outlined in submittal schedule at the end of this section (Specification Number – Item # - R0). Re-submittals shall use original submittal number followed by "R1." For additional re-submittals, use the original submittal number followed by "R2," "R3," etc.
 2. Refer to Section 01 33 23 - Shop Drawings, Product Data, and Samples, for specific requirements.

2.4 LIST OF MATERIALS

- A. Within thirty-five (35) days after the date of commencement specified in the Notice to Proceed, submit complete list of major products proposed for use, with name of manufacturer, trade name and model number of each product. Indicate products which require long lead time and length of lead time.
- B. Where product proposed for use qualifies as substitution, indicate so. Refer to Section 01 25 00 - Substitution Procedures, which defines rules governing substituting for specified products.
- C. For every material used on the Project site, a Material Safety Data Sheet (MSDS) shall be included with each submittal.

2.5 QUALIFICATIONS SUBMITTALS

- A. Within thirty-five (35) days after the date of commencement specified in the Notice to Proceed, submit qualifications for firm(s) and/or installer(s) as required in the specifications under Quality Assurance sections. Firm(s) and/or installer(s) that do not meet the required qualifications will be rejected. All costs and impacts to Contract Sum and Contract Schedule as a result of the rejection shall be borne by the Contractor.
- B. Qualifications which are to be submitted within the time limits noted above are as follows. All other qualifications specified in individual Sections, shall be submitted no later than required for the Submittals for that Section:

EDIT AND REVISE TO LIST THE SECTIONS OF THE TRADES AND SUBS THAT NEED TO BE SUBMITTED WITHIN 35 DAYS OF THE NTP. EXAMPLES ARE LIKELY: SPECIAL INSPECTION, CONCRETE, SITE WORK, SOILS ENGINEERING, SUSTAINABILITY CONSULTANT AND PROCEDURE.

2.6 PROGRESS SCHEDULE

- A. Submit Preliminary Contract Schedule and Contract Schedule as per Section 01 32 16 - Progress Schedules.

2.7 SUBMITTAL SCHEDULE

- A. This Submittal Schedule is included for the convenience of the Contractor in preparing the Submittal Schedule, and is not intended to be a duplication or a comprehensive summary of all required submittals. It is the responsibility of the Contractor to prepare the Submittal Schedule and meet the submittal requirements listed in all other Sections of the specifications.

DIVISION 01 – GENERAL REQUIREMENTS

Submittal Number	Specification Reference	Description
01 10 00	01 10 00 1.13	Written notice of actual date work will be started
01 10 00	01 10 00 1.26	Written notice designating authorized representative
01 25 00	01 25 00 1.1	List of Substitutions

01 32 16	01 32 16 1.2 (F)	Procurement Log
01 32 16	01 32 16 1.2 (G)	Utility Shut-Down Schedule
01 32 16	01 32 16 2.1	Preliminary Network Diagram
01 32 16	01 32 16 2.2	Preliminary Contract Schedule
01 32 16	01 32 16 2.3	Contract Schedule
01 33 00	01 33 00 1.4	Cost Breakdown (as per Article 9) and Schedule Values Bill of Quantities for Materials
01 33 00	01 33 00 2.1	Layout Data
01 33 00	01 33 00 2.2	Construction Photographs
01 33 00	01 33 00 2.3	Submittal Schedule
01 33 00	01 33 00 2.4	List of Materials
01 33 00	01 33 00 2.5	Qualifications
01 41 00	01 41 00 1.7 (B)	Temporary Shoring Plan
01 43 39	01 43 39 1.2	Mockups
		- (A) Schedule of Tests
		- (B) Shop Drawings: complete
		- (C) Samples
		- (D) Structural Calculations
01 45 16	01 45 16 1.3	Construction Phase Field Water Testing
		- (A) Shop Drawings
		- (B) Test Procedures
		- (C) Test Reports
01 50 00	01 50 00 1.7	Fencing Plan
01 50 00	01 50 00 1.12 (B)	Construction Noise Mitigation Plan
01 50 00	01 50 00 1.1 (B)	Temporary Utilities
		- (A) Temporary Utility Plan
		- (B) Water Conservation Measures
01 57 23	01 57 23 1.2 (B)	State General Storm Water Permit for Construction Activities Notice of Intent, when applicable
01 57 23	01 57 23 1.2 (B)	Construction Storm Water Pollution Prevention Plan (for projects involving land disturbance)
01 57 23	01 57 23 1.2 (B)	State General Stormwater Permit for Construction Activities Notice of Termination, when applicable
01 57 23	01 57 23 1.2 (C)	Erosion and Sediment Control plan (less than 1 acre of disturbance and not part of a larger common plan of development).
01 71 23	01 71 23 1.1 (B)	As-Laid-Out Drawing
01 74 19	01 74 19 1.4 (B)	Construction Waste Management Plan
01 77 00	01 77 00 1.2 (A)	Construction Procedures
		- (A) Maintenance Material
		- (B) Evidence of Compliance
		- (C) Record of Inspections and Tests
		- (D) Project Record Documents
		- (E) Operations and Maintenance Manuals
		- (F) Evidence of Payment and Release of Liens
01 78 30	01 78 30 1.5	Guarantees, Bonds, Service and Maintenance Contracts

EDIT AND REVISE THE SECTIONS BELOW TO MATCH THE REQUIREMENTS OF THE SPECIFIC PROJECT PRIOR TO BID. CONSULT WITH THE DESIGN PROFESSIONAL TO ASSIST WITH CREATING THE LIST OF SUBMITTALS BY SECTION FOR DIVISIONS AFTER DIVISION 01.

DIVISION 02 – EXISTING CONDITIONS

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
02 41 19	02 41 19 1.3	Selective Structure Demolition

DIVISION 03 – CONCRETE

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
03 10 00	03 10 00 1.2	Concrete Formwork
03 20 00	03 20 00 1.3	- (B) Product Data Reinforcing Steel
03 30 00	03 30 00 1.3	- (B) Placing Drawings - (C) Mill Certificates Cast-in-Place Concrete
03 45 00	03 45 00 1.3	- (B) Test Reports - (C) Mix Designs - (D) Manufacturer's Data - (E) Certificates Precast Architectural Concrete
		- (B) Shop Drawings - (C) Finish Samples

DIVISION 04 – MASONRY

<u>Submittal Number</u>	<u>Specifications Reference</u>	<u>Description</u>
04 22 00	04 22 00 1.3	Concrete Unit Masonry
		- (B) Product Data - (C) Samples

DIVISION 05 – METALS

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
05 12 00	05 12 00 1.3	Structural Steel
		- (B) Shop Drawings - (C) Welder's Certification
05 21 00	05 21 00 1.2	Steel Joists
		- (B) Shop Drawings
05 31 00	05 31 00 1.3	Steel Decking
		- (B) Shop Drawings
05 40 00	05 40 00 1.3	Cold-Formed Metal Framing
		- (B) Product Data
05 50 00	05 50 00 1.3	Metal Fabrications
		- (BA) Shop Drawings - (C) Welder's Certification

DIVISION 06 – WOOD, PLASTICS, AND COMPOSITES

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
06 10 00	06 10 00 1.3	Rough Carpentry - (B) Shop Drawings - (C) Samples - (D) Certificate of Conformance - (E) Material Safety Data Sheets
06 20 00	06 20 00 1.3	Finish Carpentry - (B) Shop Drawings
06 40 00	06 40 00 1.3	Architectural Woodwork - (B) Shop Drawings
06 61 00	06 61 00 1.3	Simulated Stone Fabrications - (B) Shop Drawings - (C) Samples
06 82 10	06 82 10 1.3	Fiber-Reinforced Plastic Panels - (B) Shop Drawings - (C) Samples

DIVISION 07 – THERMAL AND MOISTURE PROTECTION

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
07 13 00	07 13 00 1.2	Sheet Waterproofing - (B) Product Data
07 14 00	07 14 00 1.2	Fluid-Applied Waterproofing - (B) Product Data
07 21 00	07 21 00 1.2	Thermal Insulation - (B) Product Data
07 26 00	07 26 00 1.3	Vapor Retarders - (B) Product Data
07 54 23	07 54 23 1.4	Thermoplastic-Polyolefin Roofing - (B) Shop Drawings - (C) Product Data - (D) Manufacturer's Instructions - (E) Samples - (F) Letter of Approval - (G) Manufacturer's Approvals - (H) Certificates - (I) Inspection Reports - (J) Warranty - (K) Maintenance Instructions
07 56 00	07 56 00 1.4	Fluid-Applied Roofing - (B) Shop Drawings - (C) Product Data - (D) Manufacturer's Instructions - (E) Samples - (F) Letter of Approvals - (G) Manufacturer's Approvals - (H) Certificates

		- (I) Inspection Reports
		- (J) Warranty
		- (K) Maintenance Instructions
07 60 00	07 60 00 1.3	Flashing and Sheet Metal
		- (B) Shop Drawings
07 81 00	07 81 00 1.3	Applied Fireproofing
		- (B) Product Data
		- (C) Manufacturer's Application Instructions
		- (D) Installer's Qualifications
07 81 23	07 81 23 1.3	Intumescent Mastic Fireproofing
		- (B) Product Data
		- (C) Manufacturer's Application Instructions
		- (D) Installer's Qualifications
07 84 00	07 84 00 1.3	Firestopping
		- (B) Product Data
		- (C) Shop Drawings
		- (D) Product Certificates
		- (E) Qualification Data
07 92 00	07 92 00 1.2	Joint Sealers
		- (B) Product Data
07 95 00	07 95 00 1.2	Expansion Control
		- (B) Shop Drawings

DIVISION 08 – OPENINGS

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
08 11 13	08 11 13 1.2	Hollow Metal Doors and Frames
		- (B) Shop Drawings
08 14 00	08 14 00 1.2	Wood Doors
		- (B) Product Data
		- (C) Shop Drawings
		- (D) Samples
08 31 00	08 31 00 1.2	Access Doors and Panels
		- (B1) Shop Drawings
		- (B2) Manufacturer's Instructions
08 33 13	08 33 13 1.2	Overhead Coiling Doors
		- (B1) Product Data
		- (B2) Roughing-in Diagrams
		- (B3) Installation and Operating Instructions
		- (C) Shop Drawings
		- (D) UL Label Certification
08 41 13	08 41 13 1.4	Aluminum Entrances and Storefronts
		- (B) Product Data
		- (C) Shop Drawings
		- (D) Hardware Schedule
		- (E) Samples for Color Verification
		- (F) Test Reports
08 44 13	08 44 13 1.4	Glazed Aluminum Curtain Walls
		- (B) Product Data
		- (C) Shop Drawings
		- (D) Hardware Schedule
		- (E) Samples for Color Verification

08 51 13	08 51 13 1.4	<ul style="list-style-type: none"> - (F) Test Reports - (G) Guarantee Aluminum Windows <ul style="list-style-type: none"> - (B) Product Data - (C) Shop Drawings - (D) Samples for Color Verification - (E) Certification - (F) Warranty/Guarantee
08 71 00	08 71 00 1.2	Door Hardware <ul style="list-style-type: none"> - (B) Samples - (C) Hardware Schedule - (D) Templates
08 80 00	08 80 00 1.4	Glazing <ul style="list-style-type: none"> - (B) Warranty - (C) Structural Calculations
08 91 00	08 91 00 1.2	Louvers <ul style="list-style-type: none"> - (B1) Shop Drawings - (B2) Manufacturer's Data

DIVISION 09 – FINISHES

Submittal Number	Specification Reference	Description
09 22 16	09 22 16	Non-Structural Metal Framing
09 24 00	09 24 00	Portland Cement Plastering
09 29 00	09 29 00	Gypsum Board
09 31 00	09 31 00 1.3	Ceramic Tile
09 51 00	09 51 00 1.3	<ul style="list-style-type: none"> - (B) Color Samples Acoustical Ceilings <ul style="list-style-type: none"> - (B) Product Data - (C) Coordination Drawings - (D) Samples - (E) Qualification Data - (F) Research Reports - (G) Test Reports
09 65 00	09 65 00 1.3	Resilient Flooring <ul style="list-style-type: none"> - (B) Product Samples
09 68 13	09 68 13 1.2	Tile Carpeting <ul style="list-style-type: none"> - (B) Certification - (C) Samples - (D) Test Data - (E) Maintenance Data - (F) Shop Drawings
09 91 00	09 91 00 1.3	Painting <ul style="list-style-type: none"> - (B1) Paint Samples - (B2) Samples of Paint on Surfaces - (B3) Sample Room - (C) Materials List

DIVISION 10 – SPECIALTIES

Submittal Number	Specification Reference	Description
------------------	-------------------------	-------------

10 11 00	10 11 00 1.2	Visual Display Surfaces - (B1) Shop Drawings - (B2) Samples
10 14 00	10 14 00 1.2	Signage - (B) Product Data - (C) Shop Drawings - (D) Samples
10 21 00	10 21 00 1.2	Toilet Compartments - (B) Shop Drawings
10 28 00	10 28 00 1.2	Toilet, Bath, and Laundry Accessories - (B1) Shop Drawings - (B2) Manufacturer's Data
10 44 00	10 44 00 1.2	Fire Protection Specialties - (B1) Shop Drawings - (B2) Manufacturer's Data

DIVISION 11 – EQUIPMENT

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
11 31 00	11 31 00 1.2	Residential Appliances
11 40 00	11 40 00	Foodservice Equipment
11 XX XX	11 XX XX	Fume Hoods
11 XX XX	11 XX XX	Laboratory Equipment

DIVISION 12 – FURNISHINGS

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
12 21 13	12 21 13 1.2	Horizontal Louver Blinds - (B1) Shop Drawings - (B2) Manufacturer's Data - (B3) Color Samples
12 24 13	12 24 13 1.2	Roller Window Shades - (B1) Shop Drawings - (B2) Manufacturer's Data
12 36 61	12 36 61 1.2	Simulated Stone Countertops
12 48 13	12 48 13 1.2	Entrance Floor Mats and Frames

DIVISION 13 – SPECIAL CONSTRUCTION

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
-------------------------	--------------------------------	--------------------

DIVISION 14 – CONVEYING EQUIPMENT

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
14 21 00	14 21 00 1.4	Electric Traction Elevators - (B) Shop Drawings - (C) Samples - (D) Vibration Isolation Information

14 24 00	14 24 00 1.4	<ul style="list-style-type: none"> - (E) Electrical Wiring Diagrams - (F) Parts List - (G) Certificates and Permits Hydraulic Elevators
		<ul style="list-style-type: none"> - (B) Shop Drawings - (C) Samples - (D) Vibration Isolation Information - (E) Electrical Wiring Diagrams - (F) Parts List - (G) Certificates and Permits
14 42 00	14 42 00 1.2	Wheelchair Lifts
		<ul style="list-style-type: none"> - (B) Shop Drawings - (C) Manufacturer's Instructions - (D) Certificates and Permits
14 62 00	14 62 00 1.2	Trolley Hoists
		<ul style="list-style-type: none"> - (B1) Shop Drawings - (B2) Manufacturer's Data

DIVISION 21 – FIRE SUPPRESSION

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
21 XX XX	21 XX XX 1.7	Automatic Fire Protection Sprinklers
		<ul style="list-style-type: none"> - (A1) List of Design Requirements - (A2) Shop Drawings - (A3) Equipment Lists - (A4) Hydraulic Calculations - (A5) Welder's Certification - (A6) Sample

DIVISION 22 – PLUMBING

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
22 XX XX	22 XX XX 1.5	Basic Mechanical Materials and Methods
		<ul style="list-style-type: none"> - (A1) Product Data - (A2) Installation Data - (A3) Diagrams for Systems - (A4) Shop Drawings - (A5) Equipment Data
22 XX XX	22 XX XX 1.5	Vibration Isolation and Flexible Connections
		<ul style="list-style-type: none"> - (A1) Schedule - (A2) Details of Seismic Restraints - (A3) Special Details at Large Scale - (A4) Calculations - (A5) Installation Data
22 XX XX	22 XX XX 1.3	Plumbing Fixtures
		<ul style="list-style-type: none"> - (A) Fixture List
22 XX XX	22 XX XX 1.2	Plumbing Equipment
		<ul style="list-style-type: none"> - (A1) Manufacturer's Data - (A2) Installation Instructions - (B) Shop Drawings

DIVISION 23 – HEATING, VENTILATING, AND AIR-CONDITIONING

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
23 XX XX	23 XX XX 1.5	Basic Mechanical Materials and Methods - (A1) Product Data - (A2) Installation Data - (A3) Diagrams for Systems - (A4) Shop Drawings - (A5) Equipment Data
23 XX XX	23 XX XX 1.5	Vibration Isolation and Flexible Connections - (A1) Schedule - (A2) Details of Seismic Restraints - (A3) Special Details at Large Scale - (A4) Calculations - (A5) Installation Data
23 XX XX	23 XX XX	Ductwork and Accessories - (2.2 A) Shop Drawings (General Ductwork) - (3.1 A) Shop Drawings (Ductwork)
23 XX XX	23 XX XX 1.4	Temperature Control - (B1) Performance and Materials Data - (B2) Shop Drawings - (B3) Installation Instructions - (B4) Installer's Qualifications
23 XX XX	23 XX XX	Testing, Adjusting, and Balancing - (1.3 A) Testing and Adjusting Data

DIVISION 26 – ELECTRICAL

<u>Submittal Numbers</u>	<u>Specification Reference</u>	<u>Description</u>
26 XX XX	26 XX XX 1.3	Raceways and Fittings - (A) Product Data - (B) Equipment Data
26 XX XX	26 XX XX 1.3	Conductors - (A) Product Data - (B) Equipment Data
26 XX XX	26 XX XX 1.3	Boxes - (A) Product Data - (B) Equipment Data
26 XX XX	26 XX XX 1.3	Relays and Contactors - (A) Product Data
26 XX XX	26 XX XX 1.3	Wiring Devices - (A) Product Data - (B) Equipment Data
26 XX XX	26 XX XX 1.3	Cabinets and Enclosures - (A1) Shop Drawings - (A2) Materials List
26 XX XX	26 XX XX 1.2	Supporting Devices - (A) System Details
26 XX XX	26 XX XX 1.4	Switchboards - (A) Equipment Data - (B) Shop Drawings

26 XX XX	26 XX XX 1.3	- (C) Maintenance Data
		Transformers
		- (A1) Shop Drawings
		- (A2) Product Data
		- (B) Equipment Data
26 XX XX	26 XX XX 1.3	Pad Mounted Transformers
		- (A1) Shop Drawings
		- (A2) Product Data
		- (A3) Installation Instructions
		- (A4) Test Data
		- (B) Operation and Maintenance Manuals
26 XX XX	26 XX XX 1.3	Equipment Connections
		- (A) Product Data
		- (B) Equipment Data
26 XX XX	26 XX XX 1.3	Branch Circuit Panelboards
		- (A1) Shop Drawings
		- (A2) Materials List
		- (B) Equipment and Maintenance Data
26 XX XX	26 XX XX 1.3	Motor Controls
		- (A1) Equipment Data
		- (A2) Shop Drawings
		- (B) Maintenance Data
26 XX XX	26 XX XX 1.3	Interior Lighting Fixtures
		- (A1) List of Fixtures
		- (A2) Manufacturer's Data
		- (B) Equipment Data
26 XX XX	26 XX XX 1.3	Lecture Hall Lighting Dimming and Control
		- (A1) List of Equipment
		- (A2) Manufacturer's Data
		- (B) Operation and Maintenance Manuals

DIVISION 27 – COMMUNICATIONS

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
27 XX XX	27 XX XX 1.3	Communication System
		- (A1) Shop Drawings
		- (A2) Product Data
		- (B) Operation and Maintenance Manuals

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
28 XX XX	28 XX XX 1.6	Fire Alarm System
		- (A1) Shop Drawings
		- (A2) Product Data
		- (A3) Calculations
		- (A4) State Fire Marshal Listings
		- (A5) Installation Instructions
		- (A6) Manufacturer's Data
		- (A7) Control Panel Assembly Points
		- (A8) C.S.G. Printout

- (A9) Test Certificates
- (B) Operation and Maintenance Data

DIVISION 31 – EARTHWORK

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
31 XX XX	31 XX XX 1.x	

DIVISION 32 – EXTERIOR IMPROVEMENTS

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
32 XX XX	32 XX XX 1.x	Bases, Ballasts, and Paving
32 XX XX	32 XX XX 1.3	Turf Block Paving <ul style="list-style-type: none"> - (B) Product Data - (C) Qualification Data
32 XX XX	32 XX XX 1.3	Concrete Unit Pavers <ul style="list-style-type: none"> - (B) Samples - (C) Test Reports
32 XX XX	32 XX XX 1.2	Pavement Marking <ul style="list-style-type: none"> - (B) Product Data
32 XX XX	32 XX XX 1.2	Irrigation <ul style="list-style-type: none"> - (B) Catalog Cuts - (C) Work and Inspection Schedule
32 XX XX	32 XX XX 1.2	Bicycle Racks <ul style="list-style-type: none"> - (A) Manufacturer's Data - (B) Finish Samples
32 XX XX	32 XX XX 1.2	Soil Preparation and Finish Grading <ul style="list-style-type: none"> - (A) Product Data - (B) Test Reports
32 XX XX	32 XX XX 1.4	Planting <ul style="list-style-type: none"> - (A1) Samples - (A2) Manufacturer's Analysis - (A3) Maintenance and Recordkeeping

DIVISION 33 – UTILITIES

<u>Submittal Number</u>	<u>Specification Reference</u>	<u>Description</u>
33 XX XX	33 XX XX 1.3	Water Lines <ul style="list-style-type: none"> - (B) Product Data
33 XX XX	33 XX XX 1.4	Underground Hot Water System <ul style="list-style-type: none"> - (A) Manufacturer's Data - (B) Shop Drawings - (C) Welder's Performance Qualifications - (D) List of Valve Manufacturers
33 XX XX	33 XX XX 1.3	Storm Sewer System <ul style="list-style-type: none"> - (B) Product Data - (C) Shop Drawings
33 XX XX	33 XX XX 1.2	Trench Drain <ul style="list-style-type: none"> - (B) Shop Drawings

33 XX XX	33 XX XX 1.3	<i>Sanitary Sewer System</i>
		- (B) <i>Product Data</i>
		- (C) <i>Shop Drawings</i>
33 XX XX	33 XX XX 1.3	<i>Seawater System</i>
		- (B) <i>Product Data</i>
		- (C) <i>Shop Drawings</i>

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to University.
- B. Project Closeout and Maintenance Material Submittals: See requirements in Section 01 77 00 - Closeout Procedures.
- C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 UNIVERSITY'S ACTION

- A. General: University will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: University will review each submittal, make marks to indicate corrections or revisions required, and return it. University will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.
- C. Informational Submittals: University will review each submittal and will not return it, or will return it if it does not comply with requirements. University will forward each submittal to appropriate party.
- D. Submittals that vary significantly from Contract Documents and that fail to indicate thorough Contractor review prior to submission to the University will be returned without review. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 33 00

SECTION 01 33 23

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. All Shop Drawings, Product Data, and Samples, other than in connection with proposed substitutions, shall be submitted to The University's Representative only when specifically required; and The University's Representative will not review any other such submittals. Product Data and Samples for proposed substitutions shall be submitted to The University's Representative in accordance with Section 01 25 00 - Substitution Procedures. Contractor shall be responsible for obtaining such copies of Shop Drawings, Product Data, and Samples as it may require for its own use.
- B. All Shop Drawings and Supporting Data, Catalogs, and Schedules shall be prepared in such form that data can be identified with the applicable Specification paragraph. The data shall clearly demonstrate compliance with the Contract Drawings and Specifications and shall relate to the specific equipment to be furnished. Where manufacturer's standard drawings are employed they shall be marked clearly to show what portions of the data are applicable to this Project.
- C. All Shop Drawings and Supporting Data, Catalogs, and Schedules shall be submitted as the instruments of the Contractor who shall be responsible for their accuracy and completeness. These submittals may be prepared by the Contractor, subcontractors, or suppliers, but the Contractor shall ascertain that submittals meet all of the requirements of the Contract Documents, while conforming to structural, space and access conditions at the point of installation. The Contractor shall check all submittals before submitting them to The University's Representative and shall state that the Contractor has done so in the Contractor's letter (or form) of transmittal.

1.2 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, catalogs, brochures, performance and test data, wiring and control diagrams, all other Drawings and description 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 proper relation to adjoining Work, and amplify design details of mechanical, plumbing, and electrical equipment in proper 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 instruction, Contractor shall procure and distribute the necessary copies of such instructions to

The University's Representative and all other concerned parties; and Contractor shall furnish, install, or perform the Work in strict accordance therewith.

- C. Normally submittals will be processed by The University's Representative within twenty-five (25) working days of receipt. Some submittals may take longer to process due to complexity and volume.

PART 2 - PRODUCTS

2.1 SUBMITTAL SCHEDULE

- A. A schedule for submission of Shop Drawings, Product Data, and Samples by Contractor (the "Submittal Schedule"), and their processing and return by The University'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.
- B. Contractor shall prepare the Submittal Schedule as per the Submittal Schedule outlined in Section 01 33 00 - Submittal Procedures, and coordinate it with the Contract Schedule. No submittals will be processed before the Submittal Schedule has been submitted to and accepted by The University's Representative, except in such cases where the processing of submittals is required before the acceptance of the Submittal Schedule.
- C. In preparing the Submittal Schedule, Contractor must first determine from the Contract Schedule the date the particular item is needed for the work. Working backwards, Contractor will add the required number of days for shipment, time for fabrication, and similar items to determine the date of the first submittal.
- D. The Submittal Schedule shall be adjusted to meet the needs of the construction process and the Contract Schedule. Submittal Schedule shall be submitted in electronic PDF format after it is completed and each time it is updated by Contractor.

2.2 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.
- B. Submit shop drawings electronically in CAD and PDF format.
- C. The Contractor shall submit, at the Contractor's expense, Design and Shop Drawings, Product Data, and details of all construction, fabrications, equipment, installation, and other appurtenances for The University's Representative's review before such items shall be manufactured or used in the work.
- D. Supplemental specific requirements for Shop Drawings and details are contained in the applicable technical sections of the Specifications. The amount of reviewed copies of Shop Drawings and details submitted to The University's Representative will be returned as described in paragraph 3.2. The Shop Drawings and details will be returned with the actions as defined in paragraph 3.3.

2.3 PRODUCT DATA

A. Preparation:

1. Clearly mark each PDF 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.
5. If a sheet lists more than one product, highlight which product is to be reviewed.

B. Manufacturers' standard schematic drawings and diagrams:

1. Modify the standard schematic 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.

2.4 SAMPLES

A. Office Samples shall be of sufficient size and quality to clearly illustrate the following:

1. Functional characteristics of the products, with integrally related parts and attachment devices.
2. Full ranges of color, texture, and pattern.
3. Submit electronically in PDF a transmittal including the sample recipient and address along with a photo clearly showing product information.
4. Maintain one set of approved samples at Project Field Office.

2.5 ELECTRONIC SUBMITTALS

A. Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form.
2. Name file with submittal number or other unique identifier, including revision identifier.
 - a. File name shall use specification number, item number and Resubmittal number reference per 01 33 00 - Submittal Procedures.
3. Transmittal Form for Electronic Submittals: Use electronic form acceptable to the University's Representative, containing the following information:
 - a. Project name
 - b. Date
 - c. Name and address of University's Representative
 - d. Name of Architect
 - e. Name of Contractor
 - f. Name of firm or entity that prepared submittal
 - g. Names of subcontractor, manufacturer, and supplier
 - h. Category and type of submittal
 - i. Submittal purpose and description
 - j. Specification Section number and title
 - k. Specification paragraph number or drawing designation and generic name for each of multiple items
 - l. Drawing number and detail references, as appropriate
 - m. Location(s) where product is to be installed, as appropriate

- n. Related physical samples submitted directly
 - o. Submittal number
 - p. If resubmittal, reference original submittal number and date.
 - q. Submittal and transmittal distribution record
 - r. Other necessary identification
 - s. Remarks
4. Metadata: Include the following information as keywords in the electronic submittal file metadata:
- a. UCSC Project name and number
 - b. Number and title of appropriate Specification Section
 - c. Manufacturer name
 - d. Product name
 - e. **[INSERT OTHER REQUIRED INFORMATION HERE.]**

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW OF SUBMITTALS

- A. Prior to submittal, the Contractor shall check submittals thoroughly to ascertain that they comply in detail with the Contract Documents.
- B. 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 with other Sections.
- C. Determine and verify:
 - 1. Field measurements
 - 2. Field construction criteria
 - 3. Catalog numbers and similar data
 - 4. Conformance with Contract Documents
- D. The Contractor shall stamp the submittal that the above has been complied with, that stamp containing the Contractor's firm's name, date, and approval noted. Submittals received from the Contractor without this stamp will be returned without review.
- E. All Drawings which are submitted shall be 8-1/2 inches x 11 inches (8-1/2" x 11"), 11 inches x 17 inches (11" x 17"), or the same size as the Contract Drawings.
- F. Submit shop drawings electronically in CAD and PDF format.
- G. Coordinate each submittal with requirements of the Work and of the Contract Documents.
 - 1. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. The University's Representative retains the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

- H. Notify the University's Representative in writing, at time of submission, of any changes in the submittals from requirements of the Contract Documents.
 - 1. Substitutions will only be acceptable in accordance with the provisions of Section 01 25 00 - Substitution Procedures.
- I. Begin no fabrication or work which requires submittals until the return of The University's Representative's final reviewed submittals.

3.2 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. Submit all Submittals via email to University Representative and Cc constdoc@ucsc.edu. Email should include the UCSC project number as well as the Submittal number in the subject line.
- C. For submittals larger than 25MB submit by posting to an ftp site or similar. Notify the University Representative and Cc constdoc@ucsc.edu once posted.
- D. Number of Submittals Required:
 - 1. Unless otherwise requested by the University Representative, the Contractor shall submit an electronic file in Portable Document Format (PDF) with Optical Character Recognition (OCR) which will be retained by The University's Representative.
 - 2. Shop Drawings: Submit an electronic file in PDF OCR format of each Drawing.
 - 3. Product Data and Non-Reproducible Submittals: Submit an electronic file in PDF OCR format which will be retained by The University and The University's Representative.
 - 4. Samples: Submit the number specified in the Section which requires them. If the number is not specified in the Section, provide three (3) samples. Also submit electronically in PDF a transmittal including the sample recipient and address along with a photo clearly showing product information.
- E. Submittals shall contain:
 - Complete with the following information:
 - 1. Transmittal per Paragraph 2.5.A.4
 - 2. Identification of the product, with the Specification Section number, title, paragraph and page number or drawing reference where applicable.
 - 3. Field dimensions, clearly identified as such.
 - 4. Item number within each individual submittal.
 - 5. Reference alternate, addendum or change order number as applicable.
 - 6. Relation to adjacent or critical features of the Work or materials.
 - 7. Reference standards, such as ASTM or Federal Specification numbers.
 - 8. Identification of changes from requirements of the Contract Documents.
 - 9. Identification of revisions on resubmittals.
 - 10. An 8-inch x 3-inch (8" x 3") blank space for review stamps.
 - 11. Contractor's stamp, initialed or signed, certifying to the review of the submittal; verification of materials and field measurements and conditions; coordination with related requirements; and compliance of the information within the submittal with requirements of the Work and of the Contract Documents.
 - 12. State clearly where submittal is substitution or otherwise deviates from the Contract Documents; include justification for substitution or other deviation.

- a. Substitutions will only be acceptable in accordance with the provisions of Section 01 25 00 - Substitution Procedures.
13. Nomenclature, legend, symbols and abbreviations used in submittals shall be same as used in Contract Documents.
- F. 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 The University's Representative.
 2. Samples: Submit new Samples as required for initial submittal.
- G. Distribution:
1. Reproduce and distribute paper or electronic copies of Shop Drawings and Product Data, which carry The University's Representative review stamp, to the following locations:
 - a. Contractor's Project site file.
 - b. Record documents file maintained by Contractor
 - c. Separate Contractors
 - d. Subcontractors
 - e. Supplier or manufacturer
 2. Distribute Samples which carry The University's Representative's review stamp as directed.
- 3.3 THE UNIVERSITY'S REPRESENTATIVE'S REVIEW OF SUBMITTALS
- A. After review by The University's Representative of each of the Contractor's submissions, the material will be returned to the Contractor with actions defined as follows:
1. **No Exceptions Taken**
 2. **Implement Exceptions Noted**
 3. **Revise and Resubmit** (or **Note Markings**, or **Comment Attached**, or **Confirm Markings**, or **Resubmit**, must be revised and resubmitted)
 4. **Rejected**
 5. "This review is for general conformance with the design concept and with the Contract Documents. Markings or comments shall not be construed as relieving the Contractor from compliance with the Project plans and Specifications, nor as authorizing departures therefrom. The Contractor remains responsible for details and accuracy, for confirming and correlating all quantities and dimensions, and/or selecting fabrication processes, for techniques or assembly, and for performing the work in a safe manner."
- B. Review completed by the University's Representative will not constitute acceptance by the University's Representative of any responsibility for the accuracy, coordination and completeness of the Shop Drawings or the items of equipment represented on the Drawings. Accuracy,

coordination, and completeness of Shop Drawings shall be the sole responsibility of the Contractor, including responsibility to back check comments, corrections, and modifications from The University's Representative's review before fabrication. Acceptance of Shop Drawings does not constitute a Change Order to the Specification requirements.

- C. It is considered reasonable that the Contractor shall make a complete and acceptable submission to The University's Representative at least by the second submission of data and drawings. The University reserves the right to charge the Contractor and withhold payment due the Contractor to cover additional costs of The University's Representative's review beyond the second submission.
- D. The University's Representative will review the 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 performances of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents.

END OF SECTION 01 33 23

DRAFT

SECTION 01 33 29

BUY CLEAN CALIFORNIA REQUIREMENTS

PART - 1 GENERAL

1.1 REQUIREMENTS INCLUDED

- A. Section includes general requirements and procedures for compliance with Buy Clean California Act per California Public Contract Code, Sections 3500-3505.
- B. Contractor is required to submit current facility-specific environmental product declaration for each eligible material proposed to be used on the Project.

1.2 DEFINITIONS

- A. Environmental Product Declaration (EPD): Type III environmental impact label, as defined by the International Organization for Standardization (ISO) standard 14025, or similarly robust life cycle assessment methods that have uniform standards in data collection consistent with ISO standard 14025, industry acceptance, and integrity.

1.2.1 Eligible Materials: Any of the following:

- 1. Carbon steel rebar.
- 2. Flat glass.
- 3. Mineral wool board insulation.
- 4. Structural steel.

1.3 SUBMITTALS

- A. General: Buy Clean California submittals are to be submitted along with other required submittal items for eligible materials as described in the Specifications. EPDs for all eligible materials must be submitted prior to issuance of final payment.
- B. Facility-specific Environmental Product Declaration: For each eligible material proposed to be used on the Project
- C. Eligible Materials Cost Data: Prior to project closeout, provide a statement indicating total cost for eligible materials used on the Project. Costs exclude labor, overhead, and profit. Include breakout of costs for each eligible material.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 01 33 29.08

SECTION 01 35 00

SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.1 TREE PRESERVATION

- A. Construction activities shall be undertaken in a manner that shall avoid damage to and minimize removal of healthy and mature trees, except as explicitly identified for removal in project plans.
- B. Any conflicts between tree protection areas, or designated environmentally sensitive areas, with the geotechnical report, utility work or work by others shall be brought immediately to the attention of the University's Representative.
- C. Preservation and maintenance of trees not designated for removal is essential to the successful completion of the Work. Refer to Section 01 56 39 - Tree Protection for requirements for tree protection, identification of trees to be removed, and compensation for loss of trees not designated for removal.
- D. All trees and other plant materials on the site or on an adjacent property, except those indicated to be removed shall be protected from all injury. Removal of natural vegetation outside building footprints should be avoided. Contractor also shall take all necessary precautions to preserve the trees. Refer to requirements of Section 01 56 39 - Tree Protection.
- E. No stockpiling, temporary building, or any other temporary obstruction shall be located within the drip line (outside edge of tree branching) of any existing tree which is to remain.
- F. No pruning of trees shall be done, except by specific instructions and approval of the University's Representative.
 - 1. Advance written notice shall be given to the University's Representative if roots of a diameter greater than 1 inch must be cut.
 - 2. Roots shall be cut by hand pruning, not heavy machinery. They shall be cut cleanly. Exposed roots shall be covered and kept moist by dampened burlap until they are covered by soil.
- G. Soil within the spread of the tree branches shall not be disturbed.
- H. Preservation and maintenance of all areas marked on the Drawings as "Protected Landscape Area," "Environmental Reserve," and "Archaeological Site" are of utmost importance. Erosion or construction related disturbances of any of these areas are strictly prohibited, and all measures within the Contract Documents that pertain to protection of these adjacent areas shall be strictly enforced.
- I. See Section 01 56 39 3.9 for requirements to avoid spread of plant diseases.

1.2 ARCHAEOLOGICAL AND PALEONTOLOGICAL REQUIREMENTS

- A. Where native soils will be disturbed, the Contractor shall require all construction crews who will be involved in an earth disturbing work to attend an informal training session prior to the start of

earth moving, regarding how to recognize archaeological sites and artifacts and potential paleontological deposits or fossils.

- B. The University knows of no archaeological or paleontological deposits on the Project site, however, if any indicators of the presence of prehistoric or historic cultural deposits or paleontological deposits are discovered during construction, earth-disturbing work will be halted in an area with a radius of 100 feet (30 meters) around the suspected cultural deposits. Notify the University's Representative immediately. The University's Representative will consult with an archaeologist in accordance with applicable laws and regulations. If deemed appropriate, The University will conduct data and artifact recovery during the period when construction work is halted.
- C. The University knows of no human remains on the Project site, however, if any human remains are discovered during construction, earth-disturbing work will be halted in the vicinity immediately and the area of the find protected from disturbance. Notify the University's Representative immediately. The University's Representative will inform and consult with an appropriate representative of Native American Indian groups and the County Coroner, as required by state law. Earth disturbing work in the vicinity shall remain halted until further notice by the University's Representative. If human remains are discovered during the construction of a development project under the CLRDP, the University and/or its employees shall notify the Santa Cruz County Coroner's Office immediately. Upon determination by the County Coroner that the remains are Native American, the Coroner shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and the County Coordinator of Indian Affairs and appropriate Native American consultation shall be conducted, as outlined by PRC 5097.98.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION

3.1 MANAGEMENT AND DISPOSAL OF WASTE MATERIALS

- A. Solid Waste: All refuse and debris, combustible and non-combustible, resulting from the process of clearing, demolition and construction, shall be removed from The University's property and disposed of at a legal refuse site in accordance with section 01 74 19 - Construction Waste Management and Disposal. Contractor shall not make use of any refuse container belonging to The University.
- B. Regulated Materials:
 - 1. Storage: All regulated materials shall be contained, labeled and secured onsite in proper secondary containment by contractor in accordance with Federal, State and local regulations.
 - 2. Disposal: The UCOP approved hazardous waste vendor or an approved equal shall perform hazardous waste transportation and disposal. For a list of UC approved Transfer, Storage and Disposal Facilities, submit request to PPDO. Unit prices for regulated waste (excluding ACM and lead-based paint regulated waste) will be provided to successful contractor upon the awarding of contract. Any excess above allowance will be handled with a change order. The University Representative must be notified and pre-approve all profiles, manifests, land disposal restrictions and any other regulatory supporting documentation prior to waste transport.

3. Transportation: All regulated wastes shall be transported according to Department of Transportation regulations and all Uniform Hazardous Waste Manifests must be signed by an UCSC Environmental Health and Safety Representative.
4. Records: The University's Representative shall be provided the following documents
 - a. Employee training and certificates for hazardous waste handling and hazardous waste transport employees.
 - b. Hazardous waste handling, transport and disposal permits and insurance.
- C. Soils: At the completion of the work, any contaminated soil shall be removed as directed by The University's Representative and replaced with acceptable fresh soil by Contractor at no expense to The University.
- D. Hauling: Hauling over public streets and campus roads shall be done only with vehicles and loads which are normally permitted on State highways. "Off road" type hauling equipment and illegal State loads will not be permitted. Only City-designated truck routes will be used for truck traffic to or from the campus.
- E. Recycling: The Contractor shall develop and implement a waste management plan to recycle or salvage at least 75% of construction, demolition and land-clearing waste. Refer to Section 01 74 19 - Construction Waste Management and Disposal.

3.2 HAZARDOUS MATERIAL SPILL PREVENTION, SPILL REPORTING AND RESPONSE

A. General

1. All hazardous materials shall be stored so that they are protected from inclement weather, accidental release and vandalism.
2. Motor vehicles shall not be fueled on the Project site.
3. Spill containment measures must be made prior to fueling when fueling equipment other than motor vehicles.
4. Vehicle maintenance, other than emergency repairs, shall not be performed on the Project site.
5. Appropriate emergency spill containment supplies shall be maintained on site by the Contractor.
6. See Section 01 33 00 - Submittal Procedures for the requirements for Material Safety Data Sheets (MSDS).

B. Spill Reporting: Any spill or discharge of a liquid hazardous substance used on the Project site (paint, solvent, petroleum product, etc.) shall be reported as follows:

1. Spills greater than one quart shall be immediately reported to The University's Representative and UCSC's Project Inspector.
2. Spills greater than five gallons shall be immediately and simultaneously reported to The University's Representative, UCSC's Project Inspector, and UCSC's Office of Environmental Health and Safety (831) 459-2553.
3. Any spill or discharge of a quantity (or character) of material that is considered to be an emergency shall be immediately reported first by dialing 911 from a campus phone or (831) 459-2345 to activate the Campus emergency response system, and next reported to The University's Representative, UCSC's Project Inspector, and UCSC's Office of Environmental Health and Safety (831) 459-2553.

C. Spill Response

1. Spills shall be diked or contained by trained personnel to prevent the spilled hazardous material from entering the storm water system or leaving the Project site.
2. Spills of less than five (5) gallons shall be absorbed using an appropriate material. All contaminated materials shall be containerized, removed from Campus and disposed in accordance with Federal, state, local regulations and University policy.
3. Spills in excess of five (5) gallons shall be absorbed using an appropriate material and placed in containers under the direction of UCSC's Office of Environmental Health and Safety.
4. Any contaminated soil shall be removed by the Contractor and replaced with acceptable fresh soil. All contaminated soil must be disposed of according to the direction of UCSC's Office of Environmental Health and Safety.
5. Response shall be carried out by appropriately trained personnel utilizing safe practices.

3.3 HAZARDOUS MATERIALS PROCEDURES

- A. Except as otherwise specified, in the event Contractor encounters on the Project site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or other hazardous materials which have not been rendered harmless, Contractor shall immediately stop work in the area affected and report the condition to The University via The University's Representative in writing. The work in the affected area shall not thereafter be resumed except by written agreement of The University and Contractor if in fact the material is asbestos, PCB, or other hazardous materials and has not been rendered harmless. The work in the affected area shall be resumed in the absence of asbestos, PCB, or other hazardous materials, or when such materials have been rendered harmless.
- B. Fluorescent Light Tubes: Used fluorescent light tubes are considered hazardous waste in California because of their heavy metal content. Contractor shall properly package fluorescent light tubes to prevent breakage, and dispose of at an acceptable recycling facility.

REVISE THE SECTION BELOW AS REQUIRED TO SUIT THE PROJECT.

Notice to the Contractor on the Presence of Asbestos: Most on- and off-campus UCSC buildings contain both friable and non-friable asbestos containing building materials including but not limited to the following: transite sheets and pipes, gypsum board tape and joint compounds, vinyl asbestos floor tiles, linoleum sheets, exterior stucco, acoustical plaster, thermal system insulation, roofing products and various types of mastic. As is common for buildings built before 1980, The University has tested and found that **[INSERT ASBESTOS CONTAINING BUILDING MATERIALS AND ASBESTOS CONCENTRATIONS HERE]**. The same materials may contain varying concentrations of asbestos in other locations. Other forms of asbestos may be present which have not been identified by The University. All work under this Contract which causes disturbance or dislocation of asbestos containing materials shall be done in strict accordance with all applicable Federal, State, and Local rules, regulations, standards, and codes. The Contractor shall strictly adhere to the engineering controls and work procedures in performing this Work, except in the case of a conflict with applicable Federal, State, or Local rules, regulations, standards and codes, the more stringent requirement will govern the Work. The Contractor shall apprise all workers, supervisory personnel, subcontractors, and consultants who will be at the Project site of any potential hazards and of proper work procedures which should be followed. The Contractor must comply with the latest regulations of the U. S. Environmental Protection Agency, Monterey Bay Air Resources District, U. S. Occupational Safety and Health Administration (OSHA), State of California Department of Public Health (CDPH), and the California Department of Industrial Relations-Division of Industrial Safety and Health (CAL-OSHA).

3.4 PUBLICITY RELEASES

- A. Contractor shall not release any information, story, photograph, plan or drawing relating to the Project to anyone, including the press or other public communications media, except as submitted and approved for release by the appropriate public relations authority of The University.

END OF SECTION 01 35 00

DRAFT

SECTION 01 35 43

ENVIRONMENTAL MITIGATION

PART 1 - GENERAL

1.1 SUMMARY

- A. The Environmental Mitigation requirements for this project are included throughout the specifications and drawings. These requirements were set forth in the Environmental Impact Report or other environmental document for this project. These requirements include both those required by the project-specific environmental impact documents, by the environmental impact documents for The University's Long Range Development Plan and by Federal, state and local environmental regulations. Applicable mitigation measures identified in the 2005 Long Range Development Plan EIR that are the responsibility of the contractor or that affect the work of the contractor are included in relevant sections throughout Division 1 of these specifications. Applicable mitigation measures identified in the project-specific environmental document, and that are the responsibility of the contractor or for which the contractor share responsibility, are listed in Paragraph 3.1 below.
- B. The Contractor shall employ a qualified Biological Mitigation Coordinator to work with the appropriate University staff, representatives and consultants, as necessary to insure compliance all with mitigation measures placed on the project. The Biological Mitigation Coordinator shall become familiar with all related environmental documentation pertaining to the project and campus development, to provide the appropriate guidance to the Contractor for implementation of the appropriate mitigation measures.
- C. The Contractor shall comply with the mitigation measures in terms of what is to be controlled, acceptable methods, and standards, e.g., equipment which must be muffled and noise levels which may not exceed the specified decibel level(s).
- D. The Contractor shall comply with the mitigation measures which may include, but are not limited to, procedures and standards of control as specified in the following Sections and paragraphs:
1. Section 01 31 13 - Project Coordination
 - a. Paragraph 1.6, Noxious or Toxic Materials
 - b. Paragraph 1.7, Noise Abatement
 2. Section 01 35 00 - Special Project Procedures
 - a. Paragraph 1.1, Tree Preservation
 - b. Paragraph 1.2, Archaeological and Paleontological Requirements
 - c. Paragraph 3.1, Management and Disposal of Waste Materials
 - d. Paragraph 3.2, Hazardous Material Spill Prevention, Spill Reporting and Response
 - e. Paragraph 3.3, Hazardous Material Procedures
 3. Section 01 50 00 - Temporary Facilities and Controls
 - a. Paragraph 1.3, Public Safety and Convenience
 - b. Paragraph 1.4, Fire Protection
 - c. Paragraph 1.8, Protection of Plant Life
 - d. Paragraph 1.10, Access Roads and Parking Areas
 - e. Paragraph 1.12, Temporary Controls
 - f. Paragraph 1.13, Traffic Regulation

- g. Paragraph 1.13, Dust Palliation
- 4. Section 01 56 39 - Tree Protection
- 5. Section 01 57 13 – Temporary Erosion and Sediment Control (For Projects Under One Acre)
- 6. Section 01 57 23 – Temporary Storm Water Pollution Control (For Projects One Acre or More)

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION

3.1 PROJECT SPECIFIC MITIGATION MEASURES

- A. Refer to Article 1.1 for requirements in other specifications Sections.

COORDINATE WITH PPDO ENVIRONMENTAL PLANNER IN WRITING THE PARAGRAPHS BELOW.

- B. CEQA classification: **[LIST HERE]**
- C. **[LIST PROJECT SPECIFIC MITIGATION MEASURES]**
 - 1. **[MITIGATION MEASURE]**
 - 2. **[MITIGATION MEASURE]**

END OF SECTION 01 35 43

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL

- A. The Work shall be performed in accordance with applicable code requirements and applicable requirements of all other regulatory agencies, including, but not limited to, the following:
1. Federal Occupational Safety and Health Administration (OSHA).
 2. California Code of Regulations (CCR), Title 8, Industrial Relations (Cal OSHA).
 3. CCR, Title 13, Hazardous Materials Transportation.
 4. CCR 17, Radiation Safety.
 5. CCR 19, Public Safety.
 6. CCR 20, Public Utilities and Energy.
 7. CCR, Title 21, Public Works, Chapter One, Subchapter One, Group 2, Office of University's Representative and Construction dealing with portions applicable to provisions for the Disabled.
 8. CCR, Title 22, Public Health.
 9. CCR, Title 23, Underground Storage Tank Regulations.
 10. CCR, Title 24, Building Standards:
 - a. Part 2, California Building Code (CBC).
 - b. Part 2.5, California Residential Code, (CRC).
 - c. Part 3, California Electrical Code (CEC).
 - d. Part 4, California Mechanical Code (CMC).
 - e. Part 5, California Plumbing Code (CPC).®
 - f. Part 6, California Energy Code, (CEC).
 - g. Part 8, California Historical Code, (CBC).
 - h. Part 9, California Fire Code (CFC).
 - i. Part 10, California Existing Building Code, (CEBC).
 - j. Part 11, California Green Building Standards Code (CALGreen), Mandatory Requirements.
 - k. Part 12, California Reference Standards Code.
 11. CCR, Title 25, Housing and Community Development.
 12. CCR, Title 26, Toxics.
 13. State of California Business and Transportation Agency, Department of Transportation (CALTRANS) Standard Specifications.
 14. National Fire Protection Association (NFPA), "Life Safety Code," NFPA 101.
 15. Monterey Bay Unified Air Pollution Control District.
 16. Erosion and Sediment Control Standards, University of California, Santa Cruz.
 17. ADA Standard for Accessible Design. Note: the more stringent provision of the CCR or ADA shall apply.
 18. Coastal Prairie Enhancement and Management Plan.
 19. Rules and regulations of private and public utilities.
 20. US Fish and Wildlife Service
 21. CA Department of Fish and Game
- 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.

1.2 CONFLICTS

- A. If a conflict exists between referenced regulatory requirements or between referenced regulatory requirements and the Contract Documents, Contractor shall notify The University's Representative in writing and request that the conflict be resolved.
- B. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations and without such notice to The University's Representative, Contractor shall assume full responsibility therefore and shall bear all costs attributable thereto.

1.3 RULES AND REGULATIONS

- A. All standards, rules, regulations and orders concerning this Work, when applicable, are herein included in these Specifications.
 - 1. When the Specifications call for materials or construction of a better quality or larger sizes than required by such laws, ordinances, rules and regulations, the provisions of the Specifications shall govern.
 - 2. Contractor shall furnish without any extra charge any additional material and/or labor when required by compliance with such laws, ordinances, rules and regulations, though the work be neither mentioned in these particular Specifications nor shown on the Drawings.

1.4 THE UNIVERSITY'S INSPECTION

- A. The University's Inspector will make inspections at various times throughout the progress of the Project. These inspections will include all applicable code compliance items and any other items The University deems necessary to assure compliance with the Contract Documents. A record of these inspections will be made on an Inspection Card(s) which will be provided by The University. This Inspection Card will be The University's standard form. The Inspection Card will be posted at the Project in a suitable location and shall be protected by Contractor from loss or defacing.
- B. Contractor shall not proceed to cover up work completed which is included as an inspection item on the Inspection Card or has been added by The University's Inspector to the Inspection Card until said work has been inspected by The University's Inspector and has been noted on the Inspection Card as being satisfactory.

1.5 PERMITS AND FEES

- A. Contractor shall not be required to obtain or pay for a building permit, electrical permit, plumbing permit, mechanical permit, or grading permit.
- B. Unless specifically stated, no connections to city-owned utilities are required for this Project.
- C. Contractor shall be responsible for obtaining, either itself or through its subcontractors, all permits required by Labor Code section 7301.1. Contractor shall bear all responsibility for, and assumes all risk with regard to any delay associated with the issuance of such permits for elevator and handicap lift. Refer to Division 14.
- D. Contractor shall obtain and pay for all required permits and fees for automatic fire protection sprinklers. This includes fees for review by The Campus Fire Marshal (designated State Fire Marshal). Refer to Division 21.

- E. Contractor shall obtain and pay for all required permits and fees for Engine Generators and Fume/Laboratory Hoods. This includes fees for the Monterey Bay Air Resources District and the Pressure Vessels Unit of the Department of Industrial Relations. Refer to Division 11 and Division 26.

1.6 SAFETY

- A. In accordance with State law and generally accepted construction practices, Contractor shall be solely and completely responsible for conditions of the Project site, including safety of all persons and property during performance of the Work. This requirement shall apply continuously and not be limited to normal working hours.
- B. The Contractor is hereby informed that work on this Project could be hazardous. Contractor shall carefully instruct all personnel working in potentially hazardous work areas as to potential dangers and shall provide such necessary safety equipment and instruction as is necessary to prevent injury to personnel and damage to property. Special care shall be exercised relative to work in trenches and manholes.
- C. The Contractor shall comply with all safety standards, regulations and codes. All work, including temporary construction, shall be in full accord with the latest orders of the Division of Industrial Safety of the State of California Occupational Safety & Health Act (Cal-OSHA) and Federal Occupational Safety & Health Act (OSHA). Should more than one standard apply, the Contractor shall adhere to the most stringent. The Contractor shall carefully instruct all personnel of the potential dangers of working in potentially hazardous areas and performing potentially hazardous work. The Contractor shall provide appropriate safety equipment sufficient to protect personnel from injury and illness, and property from damage.
- D. The services of The University's Representative or The University's Inspector in conducting construction review of the Contractor's performance is not intended to include review of the adequacy of the Contractor's work methods, equipment, bracing or scaffolding or safety measures, in, on, or near the Project site.
- E. It shall be the Contractor's responsibility to provide personal protective equipment appropriate to the work being performed such as: Hard Hats (Safety Hats); foot protection; hearing protection; respiratory protection; safety glasses/face protection; hand protection. Other personal protective equipment must be worn at all times when required by the work being performed.
- F. Safety Hats: Contractor shall be responsible for enforcing the requirement that safety hats be worn by all persons on the Project site at all times, and Contractor shall provide adequate signs at appropriate locations throughout the Project site setting forth this requirement. In addition, Contractor shall provide an adequate number of safety hats for the use of authorized visitors, and shall be responsible for the distribution thereof before allowing any visitor to enter the Project site.
- G. Contractor shall provide and maintain all fencing, traffic-rated trench plating, barricades, guard rails, bridges, warning signs, lights, paved paths, and the like as are necessary to protect Contractor's own personnel, authorized visitors, and outside public from the Project site.
- H. The security and safety of the scaffolding, ladders, ramps, temporary stairs, etc., shall be the responsibility of Contractor. Hoists shall be operated only by trained operators. All such equipment shall meet all applicable safety code requirements.
- I. The Contractor shall have a written Hazard Communication Program and instruct all employees and employees of lower tier contractors in its provisions.

- J. The Contractor shall have an effective Injury and Illness and Prevention Program and instruct all employees in its provisions.
- K. The Contractor shall post and instruct all employees and employees of lower tier contractors in emergency provisions, including telephone numbers, applicable to the particular work-site(s).
- L. The Contractor shall provide lighting adequate for the work being performed.
- M. Compressed gas cylinders shall be handled and stored in an upright position. Cylinder restraints should be non-combustible and placed at 1/3 and 2/3 the height of the cylinder. Flammables shall be stored separately from oxidizers.
- N. Control hazards presented by the work and Project site by providing: barricades, fencing, guard rails, bridges, lighting, signage, traffic-rated trench plating, traffic control, dust control, refuse containment, safe material storage, and/or other methods necessary to protect employees, visitors and the public. See Section 01 50 00 - Temporary Facilities and Controls.
- O. Hand held and portable powered tools shall be maintained, guarded and stored so as not to create a hazard during use or storage.
- P. Welding and cutting shall be planned and performed to eliminate fire, electrical and employee hazards.
- Q. All electrical equipment and its use shall be free from recognized hazards that are likely to cause death or serious physical harm to employees.
- R. No equipment shall be used without a Ground Fault Circuit Interrupter.
- S. Powder actuated tools shall be used only by employees who have been trained in their operation. Signs shall be placed about the area alerting other employees and visitors that these tools are in use. Measures shall be taken to prevent injury to other employees in the vicinity. Eye/face and hearing protection shall be worn by the operator. Tools and charges shall be under the control of the operator at all times.
- T. Pneumatic tools shall be positively secured to the hose to prevent whip. Safety devices shall be required on all such tools to prevent them from being fired unless in contact with a solid surface. All employees using such tools and all employees in the vicinity shall be provided with eye/face and hearing protection.
- U. A safety fastener shall be used to secure all compressed air lines against inadvertent uncoupling and whipping.

1.7 CONSTRUCTION SAFETY ORDERS

- A. Pursuant to Labor Code 6707, Contractor shall include in Contractor's Base Bid all costs incident to the provision of adequate sheeting, shoring, bracing or equivalent method for the protection of life or limb which shall conform to applicable Federal and State safety orders.
- B. Before beginning excavation of any trench or trenches five (5) feet or more in depth, Contractor shall submit to The University's Representative a detailed "Project specific" plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. The proposed plan shall comply with the

standards established by the State of California Construction Safety Orders and Title 24 of the California Administrative Code.

1. If the detailed plan varies from such shoring system standards, it shall be prepared by a registered civil or structural engineer whose name and registration number shall be indicated on the Drawing.
 2. If a dispute arises as to whether the plan must be prepared by a registered civil or structural engineer, The University's Representative's determination of the matter shall be final and conclusive on Contractor and The University. The cost of required engineering services shall be borne by Contractor and shall be deemed to have been included in the amount bid for the work as stated in the Agreement.
 3. Neither the review nor approval of any plan showing the design of shoring, bracing, sloping, or other provisions for worker protection, shall relieve Contractor from Contractor's obligation to comply with Construction Safety Order Standards and Title 24 of the California Code of Regulations for the design and construction of such protective work, and Contractor shall indemnify The University and The University's Representative from any and all claims, liability, costs, actions and causes of action arising out of or related to the failure of such protective systems. Contractor shall defend The University, its officers, employees and agents and The University's Representative in any litigation or proceeding brought with respect to the failure of such protective systems.
- C. Contractor shall not submit for review a shoring, sloping or protective system less effective than required by the Construction Safety Orders of the Division of Industrial Safety.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 41 00

SECTION 01 42 10

ABBREVIATIONS, SYMBOLS AND DEFINITIONS

PART 1 - GENERAL

1.1 ABBREVIATIONS

- A. The following abbreviations of organizations may be used in the Contract Documents and wherever the following terms are used, the intent and meaning shall be as follows:

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturers Association
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Boiler Manufacturers Association
ACI	American Concrete Institute
ADA	Americans with Disabilities Act
ADC	Air Diffusion Council
AFI	Air Filter Institute
AGA	American Gas Association
AGMA	American Gear Manufacturers Association
AI	Asphalt Institute
AIA	American Insurance Association (formerly National Board of Fire Underwriters)
AISC	American Institute of Steel Construction
AITC	American Iron and Steel Institute
AMCA	American Institute of Timber Construction
ANSI	Air Moving and Conditioning Association
APA	American National Standards Institute
API	American Petroleum Institute

AQMD	Air Quality Management District
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASEE	American Society of Energy Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASTM	ASTM International (formerly American Society of Testing and Materials)
AWI	Architectural Woodwork Institute
AWPA	American Wood Protection Association (formerly American Wood Preservers' Association)
AWS	American Welding Society
AWWA	American Water Works Association
BHMA	Builders Hardware Manufacturers Association
CALTRANS	State of California Department of Transportation
CBC	California Building Code
CBM	Certified Ballast Manufacturers Association
CBR	California Bearing Ratio
CDF	California Department of Forestry
CDFG	California Department of Fish and Game
CEC	California Electrical Code
CMC	California Mechanical Code
CPC	California Plumbing Code
CPSC	Consumer Product Safety Commission
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard of National Bureau of Standards, US Department of Commerce

CSS	California Department of Transportation Standard Specifications
DFPA	Douglas Fir Plywood Association
DHI	Door and Hardware Institute
DOT	Department of Transportation
EPA	Environmental Protection Agency
ETL	Electrical Testing Laboratories, Inc.
FCC	Federal Communications Commission
FGMA	Flat Glass Marketing Association
FM	Factory Mutual Engineering and Research
FS	Federal Specification (General Services Administration)
FSC	Forest Stewardship Council
GA	Gypsum Association
HMMA	Hollow Metal Manufacturers Association
IBC	International Building Code (ICC)
ICC	International Code Council
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IESNA	Illuminating Engineering Society of North America
ISA	Instrument Society of America
LEED	Leadership in Energy and Environmental Design (USGBC)
MSS	Manufacturer's Standardization Society of the Valve and Fittings Industry
NAAB	National Association of Air Balance
NCMA	National Concrete Masonry Association
NEC	National Electric Code (by NFPA)
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NOAA	National Oceanographic and Atmospheric Association

NRCA	National Roofing Contractors Association
NWDA	National Window and Door Association
OSHA	Occupational Safety and Health Administration
OSHPD	Office of Statewide Health Planning and Development
PDI	Plumbing and Drainage Institute
PPIC	Plumbing and Piping Industry Institute
SDI	Steel Door Institute
SIGMA	Sealed Insulating Glass Manufacturers Association
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
SSPC	SSPC: The Society of Protective Coatings (formerly Steel Structures Painting Council)
SWI	Sealant and Waterproofers Institute
TCNA	Tile Council of North America
UBC	Uniform Building Code with California Amendments
UFC	Uniform Fire Code
UL	Underwriters Laboratories
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGBC	United States Green Building Council
WCLIB	West Coast Lumber Inspection Bureau (Grading Rules)
WI	Woodwork Institute (formerly Woodwork Institute of California)
WWPA	Western Wood Products Association (Grading Rules)
WWPI	Western Wood Preservers Institute

- B. Additional abbreviations, used in other Divisions, are listed therein.
- C. Additional abbreviations, used on the Drawings, are listed thereon.

1.2 SYMBOLS

- A. Additional abbreviations, used on the Drawings, are listed thereon.

1.3 DEFINITIONS

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

TERM	MEANING
ACCESS	Unobstructed and continuous equipment, vehicular, and pedestrian passage.
ADDENDUM (Addenda)	Clarification of, or revisions, additions or deletions to the Contract Documents, issued during the Bidding Period.
APPROVAL / ACCEPTANCE	"The approval and acceptance of The University's Representative."
AS DIRECTED	"As directed by The University's Representative."
AS REQUIRED	"As required by Applicable Code Requirements; by good building practice; by the condition prevailing; by the Contract Documents; by The University; or by The University's Representative."
AS SELECTED	"As selected by The University's Representative."
BY OTHERS	Work on the Project that is outside the scope of Work to be performed by Contractor under the Contract, but that will be performed by The University, Separate Contractors, or other means.
CHANGE ORDER	Refer to the General Conditions.
COST PROPOSAL	Contractor's cost breakdown in response to a Proposal Request.
DAYS	Refer to the General Conditions.
EQUAL	Of same quality, appearance, and utility to that specified, as determined by The University's Representative. Contractor bears the burden of proof of equality.
FURNISH	"Supply only, not install."
INSTALL	"Install or apply only, not furnish."
LETTER OF INSTRUCTION	A written document (supplemental instruction) prepared by The University's Representative which clarifies or interprets the requirements of the Contract Documents or makes minor changes to the work which do not require a change in the Contract Sum and/or Time and which are not inconsistent

with the intent of the documents. A Letter of Instruction is prepared on The University's Representative's standard form.

THE UNIVERSITY	Refer to the General Conditions.
UNIVERSITY-FURNISHED	"To be furnished by The University at The University's cost.
CONTRACTOR-INSTALLED	Delivered and installed by Contractor as part of the Work."
THE UNIVERSITY'S INSPECTOR	Representative of The University who will perform inspections of the work for code compliance and quality assurance reporting in addition to those observations and inspections performed by The University's Representative. The University's Inspector may be The University's Representative or may be another representative of The University. If the University's Inspector and the University's Representative are not the same, the Inspector will have only that authority as specifically stated herein.
PROJECT	The specific facility to be constructed under these Contract Documents.
PROJECT SITE	Geographical location of the Project.
PROPOSAL REQUEST	A written document prepared by The University's Representative which requests a quotation for changes in the Contract Sum and/or Time incidental to proposed modifications to the work. A proposal request is prepared on The University's Representative's standard form.
PROVIDE	"Furnish and install, including provision of all related work."
REASONABLY REQUIRED	The term "reasonably required" shall include those items which may not specifically be indicated or noted in these documents, but which can reasonably be assumed to be necessary to complete the work of a particular system.
REQUEST INFORMATION (RFI) FOR	A request for clarification or additional information in writing to The University's Representative (Refer to Section 01 26 10 - RFI Procedures).
SHOWN	"As indicated on the Drawings."
SPECIFIED	"As written in the Contract Documents."
SUBMIT	"Submit to The University's Representative."
SUBMITTALS	Detailed fabrication and setting drawings, samples, material lists, and manufacturer's equipment brochures setting forth in detail the Work as it is to be performed by Contractor.
UNIVERSITY-FURNISHED, CONTRACTOR INSTALLED	"To be furnished by the University at its cost and installed by the Contractor as part of the Work."

- B. Items marked "by The University" or "N.I.C." on the Drawings are not to be furnished or installed as part of this Contract.
- C. "As permitted," "permitted", "acceptable", "satisfactory", means by or to The University's Representative.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 42 10

DRAFT

SECTION 01 42 19

REFERENCE STANDARDS

PART 1 - GENERAL

1.1 STANDARD SPECIFICATIONS

- A. Standard Specifications, such as HUD, ASTM, ANSI, AASHTO, AWWA, AISC, ASME, ASHRAE, SMACNA, Commercial Standards, Federal Specification, NBFU, NEMA, UL, and the like, incorporated in the Contract Documents by reference, shall be those of the latest edition at the time of receiving bids, unless otherwise specified. Manufacturers, producers and their agents of materials required shall have such specifications available for their reference.

1.2 STANDARDS AND REFERENCES

- A. In effect on Date of Invitation for Bids: Any material specified by reference to the number, symbol or title of a specific standard such as commercial standard, a Federal Specification, a trade association standard or other similar standard, shall comply with the requirements in the latest revision thereof and any amendments or supplement thereto in effect on the date of Invitation for Bids.
- B. Incorporation into Specifications: The standards referred to except as modified in the Specification shall have full force and effect as though printed in these Specifications. These standards are not furnished to bidders, since manufacturers and trades involved are assumed to be familiar with their requirements. The University's Representative will furnish upon request information as to how copies of the standards referred to may be obtained.

1.3 "CALIFORNIA STANDARD SPECIFICATIONS"

- A. Wherever in these Specifications reference is made to the "California Standard Specifications," "CSS," or "Standard Specifications" reference shall be made to Specifications entitled "State of California, Department of Transportation, Standard Specifications," latest edition, and which is incorporated herein and made a part hereof by reference thereto.

1.4 AVAILABILITY OF STANDARD SPECIFICATIONS

- A. Where reference is made by abbreviation or by name to standards or references which are published by various associations, institutes, corporations or government agencies, those specifications may be obtained from the publishers, as listed below. Names, telephone numbers and Web sites are subject to change, and are believed to be, but are not assured to be, accurate as of the date of the Contract Documents. Neither The University nor The University's Representative shall assume any responsibility for either errors or omissions in the following lists:
- B. Industry Organizations (updated July 2019):

AA	Aluminum Association (The) www.aluminum.org	(703) 358-2960
----	--	----------------

AABC	Associated Air Balance Council www.aabchq.com	(202) 737-0202
AAMA	American Architectural Manufacturers Association www.aamanet.org	(847) 303-5664
AASHTO	American Association of State Highway and Transportation Officials www.transportation.org	(202) 624-5800
AATCC	American Association of Textile Chemists and Colorists www.aatcc.org	(919) 549-8141
ABAA	Air Barrier Association of America www.airbarrier.org	(866) 956-5888
ABMA	American Bearing Manufacturers Association www.abma-dc.org	(202) 367-1155
ACI	American Concrete Institute www.concrete.org	(248) 848-3700
ACPA	American Concrete Pipe Association www.concrete-pipe.org	(972) 506-7216
AGA	American Gas Association www.aga.org	(202) 824-7000
AHRI	Air-Conditioning, Heating, and Refrigeration Institute, The www.ahrinet.org	(703) 524-8800
AI	Asphalt Institute www.asphaltinstitute.org	(859) 288-4960
AISC	American Institute of Steel Construction www.aisc.org	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction www.aitc-glulam.org	(303) 792-9559
AMCA	Air Movement and Control Association International, Inc. www.amca.org	(847) 394-0150
ANSI	American National Standards Institute www.ansi.org	(202) 293-8020
APA	APA - The Engineered Wood Association www.apawood.org	(253) 565-6600
APA	Architectural Precast Association www.archprecast.org	(239) 454-6989

API	American Petroleum Institute www.api.org	(202) 682-8000
ARI	Air-Conditioning & Refrigeration Institute www.ari.org	(703) 524-8800
ARMA	Asphalt Roofing Manufacturers Association www.asphaltroofing.org	(202) 207-0917
ASCE	American Society of Civil Engineers www.asce.org	(800) 548-2723 (703) 295-6300
ASHRAE	American Society of Heating, Refrigerating and Air- Conditioning Engineers www.ashrae.org	(800) 527-4723 (404) 636-8400
ASME	ASME International (American Society of Mechanical Engineers International) www.asme.org	(800) 843-2763 (973) 882-1170
ASTM	ASTM International (American Society for Testing and Materials International) www.astm.org	(610) 832-9500
AWI	Architectural Woodwork Institute www.awinet.org	(571) 323-3636
AWPA	American Wood Protection Association (Formerly: American Wood Preservers' Association) www.awpa.com	(205) 733-4077
AWS	American Welding Society www.aws.org	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association www.awwa.org	(800) 926-7337 (303) 794-7711
BHMA	Builders Hardware Manufacturers Association www.buildershardware.com	(212) 297-2122
BIA	Brick Industry Association (The) www.bia.org	(703) 620-0010
BIFMA	BIFMA International (Business and Institutional Furniture Manufacturer's Association International) www.bifma.com	(616) 285-3963
CCC	Carpet Cushion Council www.carpetcushion.org	(610) 527-3880
CDA	Copper Development Association www.copper.org	(800) 232-3282 (212) 251-7200

CLFMI	Chain Link Fence Manufacturers Institute www.chainlinkinfo.org	(301) 596-2583
CRI	Carpet and Rug Institute (The) www.carpet-rug.com	(800) 882-8846 (706) 278-3176
CRRC	Cool Roof Rating Council www.coolroofs.org	(866) 465-2523 (510) 485-7175
CRSI	Concrete Reinforcing Steel Institute www.crsi.org	(847) 517-1200 (800) 328-6306
CSA	Canadian Standards Association www.csa.ca	(800) 463-6727 (416) 747-4000
DHI	Door and Hardware Institute www.dhi.org	(703) 222-2010
FM Global	FM Global (Formerly: FMG - FM Global) www.fmglobal.com	(401) 275-3000
FSC	Forest Stewardship Council www.fsc.org	49 228 367 66 0
GA	Gypsum Association www.gypsum.org	(301) 277-8686
GANA	Glass Association of North America www.glasswebsite.com	(785) 271-0208
GS	Green Seal www.greenseal.org	(202) 872-6400
HMMA	Hollow Metal Manufacturers Association (Part of NAAMM) www.naamm.org/hmma/	(630) 942-6591
ICBO	International Conference of Building Officials www.iccsafe.org	(888) 422-7233
IEEE	Institute of Electrical and Electronic Engineers www.ieee.org	(732) 562-3900
IES	Illuminating Engineering Society of North America www.iesna.org	(212) 248-5000
IGMA	Insulating Glass Manufacturers Alliance www.igmaonline.org	(613) 233-1510
ISA	Instrument Society of America www.isa.org	(919) 549-8411
ISA	International Society of Arboriculture www.isa-arbor.com	(217) 355-9411

ISO	International Organization for Standardization www.iso.ch	41 22 749 01 11
ITS	Intertek Testing Service NA (Now ETL SEMCO)	
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry www.mss-hq.org	(703) 281-6613
NAA	National Arborist Association www.natlarb.org	(603) 314-5380
NAAMM	National Association of Architectural Metal Manufacturers www.naamm.org	(630) 942-6591
NAIMA	North American Insulation Manufacturers Association www.naima.org	(703) 684-0084
NCMA	National Concrete Masonry Association www.ncma.org	(703) 713-1900
NEBB	National Environmental Balancing Bureau www.nebb.org	(301) 977-3698
NEMA	National Electrical Manufacturers Association www.nema.org	(703) 841-3200
NFPA	NFPA (National Fire Protection Association) www.nfpa.org	(800) 344-3555 (617) 770-3000
NFRC	National Fenestration Rating Council www.nfrc.org	(301) 589-1776
NGA	National Glass Association www.glass.org	(866) 342-5642 (703) 442-4890
NOFMA	NOFMA: The Wood Flooring Manufacturers Association (Formerly: National Oak Flooring Manufacturers Association) www.nofma.org	(901) 526-5016
NRCA	National Roofing Contractors Association www.nrca.net	(800) 323-9545 (847) 299-9070
NSF	NSF International (National Sanitation Foundation International) www.nsf.org	(800) 673-6275 (734) 769-8010
PCI	Precast/Prestressed Concrete Institute www.pci.org	(312) 786-0300
PDI	Plumbing & Drainage Institute www.pdionline.org	(800) 589-8956 (978) 557-0720

RFCI	Resilient Floor Covering Institute www.rfci.com	(706) 882-3833
RIS	Redwood Inspection Service www.redwoodinspection.com	(925) 935-1499
SAE	SAE International www.sae.org	(877) 606-7323 (724) 776-4841
SCAQMD	South Coast Air Quality Management District www.aqmd.com	(909) 396-2000
SDI	Steel Deck Institute www.sdi.org	(847) 458-4647
SDI	Steel Door Institute www.steeldoor.org	(440) 899-0010
SJI	Steel Joist Institute www.steeljoist.org	(843) 407-4091
SMACNA	Sheet Metal and Air Conditioning Contractors' National Association www.smacna.org	(703) 803-2980
SSPC	SSPC: The Society for Protective Coatings www.sspc.org	(877) 281-7772 (412) 281-2331
TCNA	Tile Council of North America, Inc. www.tileusa.com	(864) 646-8453
UL	Underwriters Laboratories Inc. www.ul.com	(877) 854-3577 (847) 272-8800
USGBC	U.S. Green Building Council www.usgbc.org	(800) 795-1747
WCLIB	West Coast Lumber Inspection Bureau www.wclib.org	(800) 283-1486 (503) 639-0651
WDMA	Window & Door Manufacturers Association (Formerly: NWWDA - National Wood Window and Door Association) www.wdma.com	(800) 223-2301 (312) 321-6802
WI	Woodwork Institute (Formerly: WIC - Woodwork Institute of California) www.wicnet.org	(916) 372-9943
WWPA	Western Wood Products Association www.wwpa.org	(503) 224-3930
	University of California Agriculture and Natural Resources (ANR), Research and Extension Centers	(530) 752-0127

www.ucanr.org

C. Code Agencies:

CALTRANS	California Department of Transportation, Publication Distribution Unit www.caltrans-opac.ca.gov/publicat.htm	(916) 445-3520
IAPMO	International Association of Plumbing and Mechanical Officials www.iapmo.org	(909) 472-4100
ICC	International Code Council www.iccsafe.org	(888) 422-7233
ICC-ES	ICC Evaluation Service, Inc. www.icc-es.org	(800) 423-6587 (562) 699-0543

D. Federal Government Agencies:

CPSC	Consumer Product Safety Commission www.cpsc.gov	(800) 638-2772 (301) 504-7923
DOC	Department of Commerce www.commerce.gov	(202) 482-2000
DOE	Department of Energy www.energy.gov	(202) 586-9220
DOT	Department of Transportation www.dot.gov	(202) 366-4000
EPA	Environmental Protection Agency www.epa.gov	(202) 272-0167
FCC	Federal Communications Commission www.fcc.gov	(888) 225-5322
FDA	Food and Drug Administration www.fda.gov	(888) 463-6332
FS	Federal Specifications (General Services Administration) www.gsa.gov/portal/category/100000	(800) 488-3111
GSA	General Services Administration www.gsa.gov	(800) 488-3111
HUD	Department of Housing and Urban Development www.hud.gov	(202) 708-1112
	Lawrence Berkeley National Laboratory	(510) 486-4000

LBL	www.lbl.gov	
NIST	National Institute of Standards and Technology www.nist.gov	(301) 975-6478
NOAA	National Oceanographic and Atmospheric Administration www.noaa.gov	(202) 482-6090
OSHA	Occupational Safety & Health Administration www.osha.gov	(800) 321-6742 (202) 693-1999
PHS	Office of Public Health and Science http://www.hhs.gov/ophs/	(202) 690-7694
USDA	Department of Agriculture www.usda.gov	(202) 720-2791

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 42 19

SECTION 01 43 39

MOCKUPS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Non-technical summary description of composite mockups detailed in the various Sections of the Specifications for review.
- B. Related Sections including, but not limited to:

EDIT THE SECTION BELOW TO LIST REQUIRED MOCKUPS. VERIFY LIST WITH DESIGN PROFESSIONAL.

Refer to individual specifications Sections for field samples and mockups.

1. **Section 03 xx xx - Cast-in-place Concrete Wall with Architectural**
2. **Section 07 xx xx – Flashing and Sheet Metal.**
3. **Section 07 xx xx – Joint Sealants.**
4. **Section 08 xx xx - Glazed Aluminum Curtain walls.**
5. **Section 09 xx xx - Exterior Painting**
6. **Section 09 xx xx - Interior Painting.**
7. **Division 22 – Plumbing: Plumbing Fixtures**
8. **Division 26 – Electrical: Outlets and Switches**

1.2 SUBMITTALS

- A. Procedures: In accordance with Division 1, and the requirements of respective Specification Sections.
- B. Mockups shall not be fabricated until after acceptance of required submittals.
- C. Schedule of Tests: Schedule and account of tests to be performed.
- D. Shop Drawings: Submit shop drawings inclusive of all components, footings, and bracing. Clearly identify components and materials to be integrated into the assembly.

REVISE AND EDIT TO SUIT PROJECT.

- E. Samples: Prior to construction of mockups, provide samples of products used in the complete mockup: *for example: concrete (separate sample of each finish), window section and finishes, concrete unit masonry (separate sample for each finish), wood siding, wood veneer (finished and unfinished), and metal flashing.*
- F. Structural Calculations: Submit structural calculations as required to insure the structural integrity of the mockups. The calculations must be signed by a licensed (in the State of California) structural or civil engineer.

1.3 QUALITY ASSURANCE

- A. Design Concept: Mockup requirements are intended to establish function, workmanship, finish, and color for conformance with the architectural, mechanical, and electrical design intent.
- B. Purpose: To verify suitability of colors, finishes and satisfactory integration of assembly components, such as windows, window panels, concrete unit masonry, topping slab, sheet metal items, piping appurtenances, maintenance access, and fabrication.
- C. Performance: Mockup shall be constructed for The University's Representative's review and testing for compliance with the Contract Documents and shall be used as a standard for the final installation.
- D. Make necessary additions and modifications to mockups as required to comply with performance requirements while maintaining the design concept.
- E. Modify mockups, or construct or install new components if requested by The University's Representative, until final acceptance is obtained.
- F. Work of this section shall serve as the standard for subsequent work of the like kind after approval by The University's Representative. Be prepared, at no additional cost to the University, to make as many modifications as necessary to achieve mockup which is acceptable to The University's Representative and of sufficient quality to serve as the standard for the complete Project.
- G. Following acceptance, mockups shall serve as a performance standard of quality and appearance of the work it represents, including the interface with adjacent materials and components as applicable.
- H. Coordinate fabrication, delivery, assembly, and installation with related materials to be included in the mockups. Construction of the mockup assemblies shall be under the supervision of the same personnel who will be employed for the subsequent work.

DELETE 1.a. BELOW IF MOCKUPS MAY BE INCORPORATED INTO THE WORK.

- 1. **Approved mockups shall not be incorporated into the work.**
 - a. **Remove and clear area after approval of the field mockup as directed by The University's Representative, but not before placement of similar construction to be left in place and for which the mock-up shall serve as a standard.**
- 2. Scheduling:
 - a. Construct mock-ups in a timely manner to permit review and modifications such that the Work is not delayed.
 - b. Do not proceed with ordering of components or construction subject to mock-up approval until after approval has been obtained.
 - c. Provide University's Representative not less than (10) ten working days' notice of the time each component is ready for review.

PART 2 - PRODUCTS

- 2.1 As specified in the respective Sections of the Specifications.

PART 3 - EXECUTION

3.1 MOCKUP DESCRIPTIONS

**REVISE AND EDIT TO INCLUDE A LIST OF REQUIRED MOCKUPS.
CONSIDER INCLUDING SHOP DRAWINGS OF PROPOSED MOCKUPS FOR REVIEW PRIOR TO
CONSTRUCTION OF MOCKUP.**

- A. Mockup #1: **[DESCRIPTION]**
- B. Mockup #2: **[DESCRIPTION]**

END OF SECTION 01 43 39

DRAFT

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. Contractor shall perform all tests as specified herein and as may be required to insure and demonstrate proper installation and operation of materials and equipment in this Contract.
- B. Definitions:
 - 1. The term "The University's Testing Laboratory" means a testing laboratory retained and paid for by The University for the purpose of reviewing material and product reports and performing other services as determined by The University.
 - 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 The University's Testing Laboratory and shall be acceptable to The University's Representative. It may be a commercial testing organization, the testing laboratory of a trade association, the certified laboratory of a supplier or manufacturer, 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.
- C. Tests, inspections, and acceptances of portions of the Work required by the Contract Documents or by Applicable Code Requirements shall be made at the appropriate times. Except as otherwise provided, Contractor shall make arrangements for such tests, inspections, and acceptances with Contractor's Testing Laboratory. Contractor shall give The University's Representative timely notice of when and where tests and inspections are to be made.
- D. If such procedures for testing, inspection, or acceptance 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 The University's Representative's, The University's Representative's Consultants', and The University's Inspector's services and expenses.
- E. If the University's Representative or The University's Inspector is to observe tests, inspections, or make acceptances required by the Contract Documents, The University's Representative or The University's Inspector will do so promptly and, where practicable, at the normal place of testing.
- F. Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work. Contractor shall anticipate Inspections and provide 48 hours notice prior to such Inspections.
- G. The Work will be available for inspection at any and all times for The University, The University's Representative or The University's Inspector. Contractor will be expected to consult and cooperate with The University's Representative or The University's Inspector in regard to all requirements as set forth in the Contract Documents.

1.2 TESTING AND INSPECTION

- A. Project Inspectors: The University will employ one or more qualified inspectors, acceptable to The University's Representative, who may be employed at Project site to observe progress of Work and to report to The University's Representative any nonconformance with the Contract Documents.
- B. The University will retain and pay the expenses of a Geotechnical Engineer to perform inspection, testing, and observation functions specified by The University. Geotechnical Engineer shall communicate only with The University and The University's Representative. The University's Representative shall then give notice to Contractor, with a copy to The University, of any action required of Contractor.

*** The following is for example only ***

For all activities included in these Contract Documents that require testing and inspection by The University's Geotechnical Engineer, The University will deduct the cost of the testing and inspection from the Contract Price by deductive Change Order. The fee for testing and inspection by The University's Geotechnical Engineer shall be a maximum of \$800 (eight hundred dollars) per day or maximum total of \$28,000 (twenty-eight thousand dollars). The actual fee may be less than \$800 (eight hundred dollars) per day if The University's Geotechnical Engineer is not providing full time observation and/or testing services for that day. The fee shall be for the actual amount of the costs incurred by The University's Geotechnical Engineer, but the total fee to the Contractor will not to exceed \$28,000 (twenty-eight thousand dollars). The contractor shall not be responsible for hiring or directly paying The University's Geotechnical Engineer.

The time, in working days, to accomplish all activities included in the Contract Documents that require testing, observation, and inspection by the University's Geotechnical Engineer, shall be multiplied by the dollar amount per working day. This amount shall be the amount included in the base bid. The activities that require testing, observation, and inspection by The University's Geotechnical Engineer include, but are not limited to; excavation, trenching, and backfill, including natural soils prior to footing placement, compaction testing for backfill, soil testing and re-testing, observation and inspection during earth work as specified, observation prior to fill placement, compaction of import fill, compaction operations of asphaltic concrete paving, and during backfill operations for outside utilities, including underground utility lines. The fee for the University's Geotechnical Engineer may be calculated using the duration of time computed for the base bid (for the activities that require testing and inspection by the University's Geotechnical Engineer including, but not limited to, those noted above) multiplied by the dollar amount of the fee per each working day.

- 1. The activities that require testing, observation, and inspection by The University's Geotechnical Engineer include, but are not limited to; excavation, trenching, and backfill, including natural soils prior to footing placement, compaction testing for backfill, soil testing and re-testing, observation and inspection during earth work as specified, observation prior to fill placement, compaction of import fill, compaction operations of asphaltic concrete paving, and during backfill operations for outside utilities, including storm drain lines.
- C. Persons performing testing and inspections shall not be authorized to:
 - 1. Release, revoke, alter or enlarge requirements of the Contract Documents.
 - 2. Stop Work except as may be required to perform testing or inspection operations.
 - 3. Advise on or issue directions relative to any aspect of construction means, methods, techniques, sequences, or procedures.

1.3 CONTRACTOR'S RESPONSIBILITIES

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions and workmanship, to produce work of specified quality. Testing and inspection shall not relieve Contractor of his responsibility for quality of materials in place.
- B. Be responsible for scheduling all testing and inspections specified.
 - 1. Schedule work which is to be tested or inspected so that tests can be performed within a reasonable time period.
 - 2. Notify and obtain concurrence of Project Inspector prior to scheduling testing or inspection by Testing Laboratory or Geotechnical Engineer.
 - 3. Notify the University's Representative at least forty-eight (48) hours in advance of operations on site requiring testing or inspection.
 - 4. Notify the University's Representative in sufficient time in advance of off-site operations requiring testing or inspection, in order that testing at the source can be arranged without delaying Work.
 - 5. Notify the University's Representative at least four (4) working days prior to commencement or resumption of operations requiring observation or testing by The University's Geotechnical Engineer.
 - 6. When a specified test or inspection is not performed due to Contractor's failure to schedule services, The University's Representative will establish remedial work and Contractor shall bear cost of remedy.
- C. Reimburse The University for the following by deduction from Contract Sum:
 - 1. Costs of testing required because of changes in materials or proportions required by the Contractor.
 - 2. Where inspections or tests prove unsatisfactory or not in compliance with Contract Documents, costs for further inspection and retesting.
 - 3. Costs attributable to the Contractor's methods of operation, when these methods result in excessive test and inspection costs to The University, and if after warning, costs remain excessive.
 - 4. Premium time fees for testing performed after regular working hours or on Saturday, Sunday, or on legal holidays; except when testing is required for The University's requested overtime work.
 - 5. Tests arising from errors and omissions by the Contractor.
 - 6. Retests of materials that fail; tests required by the lack of required identifications of materials (mill tests, manufacturer's certifications, etc.); and reinspections.
 - 7. Services required to expedite Contractor's operations.
 - 8. Testing and inspection fees for travel and per diem expenses, when shops or plants of fabrication are located more than 50 miles from the Project site.
- D. Where required by individual Sections of the Specifications, pay all costs associated with inspection and testing. For example, but not limited to, the following:
 - 1. Concrete mix designs.
 - 2. Certified mill test reports.
 - 3. Qualification of welding procedures, operators and welders.
- E. Repair or replace damage to work made necessary by retesting.
- F. Secure and deliver to The University's Testing Laboratory adequate quantities of representative samples of materials proposed for use as specified.

- G. Submit to The University' Testing Laboratory the preliminary design mixes proposed to be used for concrete and other materials which require review by The University's Testing Laboratory.
- H. Submit copies of product test reports as specified.
- I. Furnish incidental labor and facilities:
 - 1. To provide The University's Testing Laboratory access to the 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.
- J. Provide notice to The University's Representative sufficiently in advance of operations to allow for The University's Testing Laboratory assignment of personnel and scheduling of tests.
- K. When tests or inspections are not performed after such notice, Contractor shall reimburse The University for The University's Testing Laboratory personnel and travel expenses incurred.
- L. Several Sections of the Specifications require testing by the Contractor's Testing Laboratory. Refer to each Section and the Submittal Schedule, Section 01 33 00 - Submittal Procedures.

1.4 TESTING SERVICES

- A. General: The University may retain Testing Laboratories to observe structure excavation, to test compaction of backfill, and to test concrete, masonry, steel, reinforcing and other construction materials and methods as The University's Representative may deem necessary and as the Specifications require. The Testing Laboratory will make as many field observations and tests as are required to determine the acceptability of the Work. Contractor shall provide safe access to the Work as required for the Testing Laboratories to perform sampling and tests. Contractor to provide safety equipment as required to perform Inspections.
- B. Notice to The University's Representative: In instances where The University's Representative requires testing and where the Specifications require work to be specially tested or approved, it shall be tested only in the presence of The University's Representative after timely notice of its readiness for inspection and test, and the Work after testing shall be covered up only upon the consent thereto of The University's Representative.
- C. The results of any tests made are for the information of The University. Regardless of any test results, Contractor is solely responsible for the quality of workmanship and materials and for compliance with the requirements of the Drawings and Specifications.

1.5 ADDITIONAL TESTING AND INSPECTION

- A. If initial tests or inspections made by The University's Testing Laboratory, or Geotechnical Engineer reveal that any portion of the Work does not comply with Contract Documents, or if The University's Representative determines that any portion of the Work requires additional testing or inspection, additional tests and inspections shall be made as directed.
 - 1. 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 The University.
 - 2. 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 The University's Representative and The University's consultants, shall be deducted from the Contract Sum.

1.6 TEST REPORTS

- A. Certification and Copies: The University's Testing Laboratory will furnish certified reports summarizing results of inspection of plant and other equipment as to adequacy and compliance, and results of tests and inspections. Electronic copies of the reports will be furnished to The University's Representative, The University's Inspector, and the Contractor.
- B. Contractor's Testing Laboratory shall submit electronic copies of all reports to The University's Representative, and University's Inspector, indicating observations and results of tests and indicating compliance or non-compliance with the Contract Documents.
- C. Form: Reports will clearly distinguish type of test, material tested, whether original (first) test or retest, and related information.

1.7 SAMPLES AND MATERIALS

- A. Contractor shall furnish samples and materials for testing free of charge, and shall provide job storage facilities.

1.8 UNDESIRABLE CONDITIONS / NONCONFORMANCE

- A. Substandard Test Results: When test or inspection reveals undesirable conditions, nonconformance or failure to meet requirements, The University's Testing Laboratory will notify The University's Representative. The University's Representative will notify Contractor that the Work does not meet requirements and is rejected.
- B. Correction: Work done or materials delivered that fail to comply with requirements of Specifications or Drawings shall be rejected and shall immediately be made satisfactory at no additional expense to The University.

1.9 MATERIALS AND WORKMANSHIP

- A. All work under all Sections shall be performed in strict accordance with the highest standards of practice related to the trades involved and shall be complete and properly coordinated with all work adjacent or related to it.
- B. All materials must be of the specified quality and equal to approved samples, if samples have been submitted. All work shall be done and completed in a thoroughly workmanlike manner, notwithstanding any omission from these Specifications, or the Drawings, and it shall be the duty of Contractor to call The University's Representative's attention to apparent errors or omissions and request written instructions before proceeding with the Work. The University's Representative may, by appropriate instructions, correct errors and supply omissions; such instructions shall be as binding upon Contractor as though contained in the original Specifications or Drawings.
- C. All defective work or materials shall be promptly removed from the premises by Contractor, whether in place or not, and shall be replaced or renewed in such manner as The University's Representative may direct. All materials and workmanship of whatever description shall be subjected to the inspection of, and rejection by The University's Representative if not in

conformance with the Specifications. The decision of The University's Representative is final and conclusive upon the parties.

- D. Any defective material or workmanship, or any unsatisfactory or imperfect work which may be discovered before the final acceptance of the Work or within the initial (and any extended) warranty period, shall be corrected immediately as required by The University, without extra charge, notwithstanding that it may have been overlooked in previous inspections and estimates. Failure to inspect work shall not relieve Contractor from any obligation to perform sound and reliable work as herein described.

1.10 APPROVAL

- A. Approval of the Work in part or as a whole by The University's Representative shall not relieve Contractor of the responsibility for such compliance with the requirements of the Contract Documents. Such approvals may be withdrawn at any time that subsequent examination reveals that apparently satisfactory Work is, in fact, either defective or otherwise fails to comply. Such work from which approval has been withdrawn shall be replaced or re-executed in accordance with the Contract, at no expense to The University.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 45 00

SECTION 01 45 16

CONSTRUCTION PHASE FIELD WATER TESTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Exterior wall construction phase field water testing, complete as specified, including:

1. Periodic, ongoing field water testing of exterior wall assemblies to assure that installed Work conforms to:
 - a. Performance requirements as specified in the individual Sections referenced in the "Related Sections" below.
 - b. Construction quality control standards as demonstrated in the Work of Section 01 43 39 - Mockups.
2. Test Locations:
 - a. Shall include a minimum of three (3) different locations selected by the University's Representative.
 - 1) Locations shall include examples of typical building enclosure materials, including exterior finish materials and assemblies, windows, glass and glazing and related materials and accessories.
 - 2) Locations shall represent Work completed at the beginning, middle and end of the building enclosure construction schedule.
 - b. Shall include nominal 1.5-floor height by one room width test locations. During field water testing, water shall be applied the floor line of the level above and below the test floor and all floor levels shall be checked for water leakage.

B. Related Sections:

EDIT SECTIONS BELOW TO COORDINATE TO PROJECT.

1. **Section 01 43 39 - Mockups.**
2. **Section 07 92 00 - Joint Sealants.**
3. **Section 08 44 13 - Glazed Aluminum Curtain Walls.**
4. **Section 09 24 00 - Portland Cement Plastering.**

1.2 REFERENCE STANDARDS

A. American Architectural Manufacturers Association (AAMA):

1. AAMA 501; Methods of Test for Metal Curtain Walls.
2. AAMA 501-94; Methods of Test for Exterior Walls; including

- a. Document 501.1 "Standard Test Method for Exterior Windows, Curtain Walls and Doors."
 - b. Document 501.2 "Field Check of Metal Curtain Walls for Water Leakage."
 - c. Document 501.3: "Field Check of Water Penetration through Installed Exterior Windows, Curtain Walls, and Doors, by Uniform Air Pressure Difference."
3. AAMA 502-02; "Voluntary Specifications for Field Testing of Windows and Sliding Glass Doors."
- B. ASTM International (ASTM):
- 1. ASTM E 783; Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors.
 - 2. ASTM E 1105: "Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, Curtain Walls, by Uniform of Cyclic Static Air Pressure Difference."

DELETE C. IF LEED DOES NOT APPLY TO THIS PROJECT.

- C. Leadership in Energy and Environmental Design, current version.

1.3 SUBMITTALS

- A. Comply with requirements of Section 01 33 00 - Submittals.
- B. Shop Drawings: Submit drawings indicating locations and sizes of test locations.
- C. Test Procedure: Submit detailed description of each test including testing sequence, location of deflection gauges and other measuring devices, and types of hose spray heads and other accessories to be employed in test procedures.
- D. Test Reports: Submit as specified under Paragraph 3.2 "Reports."

1.4 PROJECT CONDITIONS

- A. Environmental Requirements:
 - 1. Unless otherwise directed or required for testing, maintain enclosed space of test chamber within ambient temperature of 67 degrees Fahrenheit to 73 degrees Fahrenheit and relative humidity of 35 percent to 45 percent.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General:
 - 1. Provide testing equipment in conformance with the requirements of AAMA 501.2, "Field Check of Metal Curtain Walls for Water Leakage" and AAMA 502-02, "Voluntary Specifications for Field Testing of Windows and Sliding Glass Doors".

PART 3 - EXECUTION

3.1 FIELD PERFORMANCE TESTING

A. Preparation:

1. All Work shall be complete for the exterior wall assembly in the test area, except do not install the following items until successful completion of testing procedures:
 - a. Interior wall finishes, including gypsum board.
 - b. Electrical devices may be roughed-in but not energized.
2. All scaffold tie-back or other temporary construction phase penetrations of the building enclosure shall be removed and holes patched and repaired in the test area.
3. Exterior Face of Test Area: Shall be accessible by scaffold, motorized work platform, or traveling lift in conformance with OSHA guidelines, or be located on grade.
4. Interior Face of Test Area: Shall be kept clear of materials and equipment and provided with sufficient lighting to observe interior face of test area during testing.

B. Testing Methods: Conform to AAMA 501.2, "Field Check of Metal Curtain Walls for Water Leakage", except as follows:

1. In addition to the "Metal Curtain Walls" in the title of the AAMA document, tests shall include composite assemblies including the Work of all Sections in the "Work Specified Elsewhere" Paragraph of this Section.
2. Modify the number and size of test locations as specified in this Section.
3. Modify length of test periods as follows:
 - a. Windows and Window Wall: Increase water flow period to 120 minutes.
 - b. Exterior Wall Assemblies: Increase water flow period to 120 minutes.

C. Field Testing:

1. University shall witness all tests.
2. Air Infiltration: Per performance criteria specified in the individual Sections in the "Work Specified Elsewhere" Paragraph of this Section.
3. Water Penetration Criteria: Water penetration is defined as appearance of controlled water other than condensation on interior of any part of the Work.
 - a. No water penetration shall occur for water tests as specified.
4. Identify locations of any observed water leakage. Make repairs and modifications as required. Re-test assembly until no leaks are observed.
5. If water leaks persist, or the source of water leaks cannot be determined through direct observation, provide additional more strict test procedures, as required to locate the source of water leakage, including:
 - a. If water leaks persist, or the source of water leaks cannot be determined through direct observation, provide additional more strict test procedures, as required to locate the source of water leakage, including:
6. University will determine necessity and scope of additional tests based upon absence of leakage in initial tests.

- a. Any corrective work required shall be responsibility of Contractor, along with costs of retesting and costs incurred by University.
- b. All remedial measures shall maintain standards of quality and are subject to review by University.

3.2 REPORTS

- A. Contractor's Field Water Testing Report: Submit Contractor's Report of Field Water Testing, including:
 1. Modifications: Submit proposed modifications or repairs to University for review prior to undertaking work.
 2. Submit report per AAMA 501 and 502; include visual observations, recorded test data, and as-built shop drawings with all revisions, modifications, and changes clearly annotated.
 3. Photographs: Take photographs at start and conclusion of each testing phase, and as otherwise directed.
 - a. Digital Camera Type: Minimum seven (7) megapixel camera including one (1) or more lenses capable of a 35mm equivalent range of 28mm to 120mm.
 - b. File Type: Provide ".jpg" files of minimum 2,048 by 1,536 file size.
 - c. Print Type: 8-inch by 10-inch minimum size; color glossy digital prints from an Ink Jet or Dye Printer with a minimum resolution of 2880 dpi by 720 dpi.
 - d. For locations of water leakage or other failures, provide additional images as required to document the fault.
 4. Video: Record all performance test operations on US standard DVD with audio identification of project, date, time, and identification and description of each test operation.

END OF SECTION 01 45 16

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. The Drawings show, if applicable, existing above and below grade structures, drainage lines, storm drains, sewers, domestic water, irrigation water, campus heating water, campus cooling water, gas, electrical, telephone and cable communications ductbanks, and other utilities which are known to The University.
- B. Use extreme caution and appropriate discovery methods to locate all known existing installations before proceeding with construction operations which may cause damage to such installations. Existing installations shall be kept in service where possible and damage to them shall be repaired with no adjustment to the Contract Sum.
- C. If any other structures or utilities are encountered, request in writing The University's Representative to provide direction on how to proceed with the Work.
- D. If any structure or utility is damaged, take all appropriate action to ensure the safety of persons and property.
- E. As designated on the Drawings, protect all existing adjacent areas marked as "Protected Landscape Area," "Tree Protection," "Environmental Reserve," and "Archaeological Site," taking special care to avoid any erosion, material or equipment storage, or disturbance to such areas during construction.
- F. Prior to beginning any excavation, the Contractor shall employ an underground utility locating service to survey the area of disturbance and locate all known utilities. The locating service shall also review the area for signs of existing utilities not indicated on the plans. Existing utilities shall be exposed prior to trenching by pot holing. Positions of existing utilities once located shall be recorded on the project record drawings.

1.2 INTERRUPTION OF BUILDING SERVICES

- A. Any utility (including electronic system) interruptions (shutdown or cutover) shall be coordinated with The University, via The University's Representative. At least ninety (90) day preliminary written notice shall be given prior to any utility interruption. Final written notice, on University supplied form, shall be given a minimum of seven (7) working days in advance of utility interruption. Any interruption of utility service will be made by The University upon such notice. The Contractor shall not interrupt any utility service.

1.3 PUBLIC SAFETY AND CONVENIENCE

- A. Protection and Obstructions: Contractor shall at all times so conduct Contractor's work as to insure the least possible obstruction to traffic and inconvenience to pedestrians in the vicinity of the Work, and to insure the protection of persons and property. No road, street walkway, pedestrian walkway nor building corridor shall be closed except with the permission of The University's Representative. At least ninety (90) day preliminary written notice shall be given prior

to any traffic interruption. Final written notice, shall be given a minimum of fourteen (14) working days in advance of traffic interruption. Any interruption of traffic will be made by The University upon such notice. The Contractor shall not interrupt any traffic route otherwise.

- B. Fire Safety: Fire hydrants on or adjacent to the Work shall be kept accessible to firefighting equipment at all times.
- C. Temporary Provisions: Temporary provisions shall be made by Contractor to ensure the use of sidewalks, paths, and the proper functioning of all gutters, sewer inlets, drainage ditches and culverts, and natural water courses.
- D. Warning Signs and Barricades: When working in areas that present safety hazards, warning signs and barricades shall be placed in effective locations to prevent unauthorized entry. When aisles or roadways are blocked, detour signs must be installed to clearly designate an alternate route. The Contractor shall provide appropriate barricades and signs. Barricades with blinking lights must be provided in roadways, bikeways, and pathways for barricading overnight. Proper warning signs stating 'ROAD CONSTRUCTION AHEAD' must be placed before barricades in roadways and on bike paths. Flag persons may be required to supplement warning signs and barricades.

1.4 FIRE PROTECTION

- A. Burning: No burning of any kind will be permitted on the Project site without written permission of The University.
- B. All Hot Work: No hot work of any kind will be permitted on the Project site without written permission from the University's Fire Department.
- C. Spark Arresters: No person shall use or operate any internal combustion engine which is operated on hydrocarbon fuels on any forest, brush, or grass covered lands without providing, and maintaining in effective working order, a spark arrester approved by the Division of Forestry attached to the exhaust system. Motor trucks, truck tractors, buses and passenger vehicles, except motorcycles, are not subject to the provisions of this paragraph provided the exhaust system is equipped with a muffler as defined in the Vehicle Code. Spark arresters affixed to the exhaust system of engines or vehicles, as described in this Section, shall not be placed or mounted in such a position as to allow flames or heat there from to ignite any flammable material.
- D. Shovels for Fire Protection: All mobile equipment, including trucks, tractors, bulldozers, and other mobile equipment, shall be equipped with serviceable shovels for use in fire protection. Common carriers are exempt from this paragraph.
- E. Area Fire Protection:
 - 1. No person shall use or operate any motor engine, boiler, stationary equipment, welding equipment, cutting torches or grinding devices from which a spark, fire or flame may originate without first clearing away all flammable material, including snags, from the area around such operation for a distance of 10 feet and without maintaining a serviced 10-pound multipurpose fire extinguisher ready for use at the immediate area during the operation. In the use of tar pots in roofing operations, two 10-pound fire extinguishers are required; one on the roof and one in close proximity to the tar pot. The extinguisher(s) must display California State Fire Marshal's extinguisher service tag indicating that the extinguisher(s) have been serviced within the current year.
 - 2. Refer to Section 01 51 00 – Temporary Utilities for other fire protection requirements.
- F. Gasoline Powered Saws: No person shall use or operate any gasoline powered saw unless such saw is operated at least 50 feet from any flammable material, without providing and maintaining

at locations of use or operation of said equipment for firefighting purposes, one serviceable fire extinguisher, or, in lieu thereof, one serviceable shovel.

- G. Access for Fire Fighting: Access routes for firefighting equipment shall be maintained. Fire hydrants and fire department connections shall be kept clear of any obstructions.
- H. Fire Extinguishers: Fire extinguishers shall be located on or adjacent to:
 - 1. Storage sites of combustibles.
 - 2. Fuel dispensing vehicles.
 - 3. Sites of hot work operations.
 - 4. The Contractor's Superintendent's vehicle.
 - 5. The Contractor's office or shed.
 - 6. In addition, at least one approved extinguisher shall be provided in plain sight on each floor at each usable stairway where combustible material could accumulate. Extinguishers shall be placed within the structure so that the maximum travel distance to an extinguisher is no more than 75 feet.
- I. Smoking: Smoking and the use of smokeless tobacco or unregulated nicotine products (such as electronic cigarettes) is prohibited on and within UCSC managed property. UCSC managed property includes all UCSC facilities, owned or leased, both indoor and outdoor. The sale or distribution of tobacco and unregulated nicotine products on or within UCSC managed property is also prohibited. The Contractor shall make all necessary provisions to enforce this requirement, including the installation of "NO SMOKING" signs.
- J. Flammable and combustible liquids must be used and stored so as not to create a hazard to employees or property, following all the rules required by the National Fire Protection Association.
- K. Outside storage site of Combustibles: All storage of combustibles outside of structures shall be in compliance with OSHA Title 29, Section 1952.12.C. #3 and Title 19, 3.07; California Fire Code (Part 9, Title 24 California Code of Regulations) Articles 11 and 87.
- L. Tank Trucks: The use of tank trucks shall be in conformance with NFPA, 385.
- M. Gasoline Storage: No more than 25 gallons of gasoline shall be stored in the Project site outside of an approved storage cabinet. Cabinets shall be constructed of metal and approved by The University's Representative in consultation with the University's Fire Department. All gasoline storage shall be in conformance with NFPA, No. 30, and Article 79, California Fire Code (Part 9, Title 24, California Code of Regulations).

1.5 TEMPORARY CONSTRUCTION

- A. Contractor shall provide, maintain and remove upon completion of Work, temporary construction required for performance of the Work and shall restore disturbed portions of the Project site or other disturbed areas to the satisfaction of The University's Representative.

1.6 CONSTRUCTION AIDS

- A. Scaffolding: Provide as required for execution of any part of the Work. The security and safety of the scaffolding, ladders, ramps, temporary stairs, etc., shall be the responsibility of Contractor. Hoists shall be operated only by trained operators. All such equipment shall meet all applicable safety code requirements.

- B. Cranes, Hoists or Chutes: Provide as required for movement of personnel, materials or equipment. The manufacturer's specifications and limitations shall be followed. Where not available, the Contractor is required to employ a qualified engineer, competent in the field, who shall determine, communicate, and document the crane's limitations to the University's Representative.
1. The rated loads of all cranes and their components must be plainly marked in full view of the operator. Attachments shall not exceed the crane's limitations.
 2. Adequate safe access must be provided to the operating station(s).
 3. All components must be in good working order; appropriate certifications, as required by the local authority having jurisdiction, must be provided; and a record of preventative maintenance, repair and replacement must be available on-site.
 4. Hoisting equipment such as sheaves, blocks, hooks, ropes, and slings must be maintained free from undue wear, in good working order and inspected frequently as specified by the local authority having jurisdiction.
 5. Any defective equipment must be removed and replaced immediately, or the crane must be taken out of service until repairs have been completed.
 6. Loads must not be handled until they have been: determined to be within the capacity of the crane; secured and balanced; the pathway of the load is clear of all obstructions; tag lines are available when appropriate; and all personnel are clear of the lift.
 7. Fire suppression equipment must be available and in good working order.
 8. Crawler and Rubber Tired cranes are to be placed to ensure stability at all boom angles and radii to be used in the lifts.
 9. Rated load capacities, recommended operating speeds, any special hazard warnings shall be posted to be visible to the operator from the control station.
 10. Only designated personnel are authorized to operate cranes.
 11. Unless electrical distribution and transmission lines have been de-energized and visibly grounded, or special insulating barriers have been erected or placed around the lines, no part of the crane or load shall be within a minimum clearance 10 feet from 50 KV or less. For lines exceeding 50 KV, additional clearances shall be provided according to the local authority having jurisdiction.
 12. Personnel shall be lifted by crane ONLY if all other means are either more hazardous or impossible due to design or Project site conditions. If personnel must be lifted, the AHJ regulations must be followed carefully.
 13. The meaning of signals must be thoroughly understood by both the operator and the signal person. Only one person will be designated as the signal operator.
 14. The operator is not permitted to leave the controls while a load is suspended.
- C. Bracing and Shoring: Provide as adequate for intended use and for loads imposed without excessive settlement, deflection, or deformation. Properly support, wedge and secure to prevent displacement or failure. Refer to Section 01 41 00 – Regulatory Requirements.
1. Shore, brace, sheet, and slope excavations as required to prevent caving, erosion, danger to persons and structures, or interference with construction operations as required to comply with safety laws.
- D. Trenching and Excavation: Refer to Section 01 41 00 - Regulatory Requirements.
- E. Moisture Control:
1. Perform pumping, trenching, damming and under-draining necessary to keep the Project site free from water during construction.
 2. Dispose of water in accordance with Federal, state and local storm water requirements, taking care to ensure that no existing water disposal facilities are impeded, clogged, damaged or interfered with in any way.

3. Refer also to Section 01 57 13 – Temporary Erosion and Sediment Control (For Projects Under One Acre) or Section 01 57 23 – Temporary Storm Water Pollution Control (For Projects One Acre or More).

F. Illumination: When any work is performed at night or where daylight is obscured, provide artificial light sufficient to execute the Work properly and to permit thorough inspection.

1.7 BARRIERS AND ENCLOSURES

A. Contractor shall submit for approval a plan for fencing entire limits of work (Project Site) which coordinates University-installed fencing, if any, designated environmentally sensitive areas, Project boundary, barriers, tree protection, access to and from site and sequencing requirements.

B. All fencing shall be galvanized chain link type, six (6) feet high, with materials and installation conforming to the requirements of the Chain Link Fence Manufacturers Institute (CLFMI) "Product Manual" for Type I fences.

C. A minimum of two vehicular gates, 10 feet wide, shall be provided at locations acceptable to the University and approved by The University's Representative. The fencing shall be maintained and relocated by Contractor throughout the Project to the satisfaction of The University's Representative as required.

D. To avoid impacts to wetlands adjacent to the development portion of the Project, construct exclusionary fencing (e.g. orange construction fencing or equivalent barrier) to separate the buffer around the existing wetlands from construction activities prior to the start of ground disturbance activities. Confirm location with the University's Representative.

E. The fencing shall be maintained and relocated by Contractor throughout the Project to the satisfaction of the University's Representative as required.

F. All construction related holes capable of entrapping wildlife will either be covered at the end of each workday or ramped in a manner that will prevent entrapment.

G. Refer to Section 01 35 43, Environmental Mitigation for specific requirements related to environmental mitigation measures.

1.8 PROTECTION OF PLANT LIFE

A. No trees shall be removed, pruned, or trimmed without prior approval by The University's Representative.

B. Solvents, oils, and any other materials which may be harmful to plant life shall be disposed of in containers as directed by The University's Representative and removed from the site. At completion of the Work, any contaminated soil shall be removed and disposed of according to the direction of the Office of Environmental, Health and Safety, and replaced with good soil by the Contractor at no expense to The University.

1. Refer to soil requirements in Division 02.

C. All staging, maintenance and storage of heavy machinery shall be conducted in such a manner that no fuel, oil or other such petroleum products may run off or be washed by rainfall into the environment. Upon completion of construction, any excess material shall be removed from the work area and any areas adjacent to the work area where such material may be washed into the environment.

- D. Drip lines of trees: No diesel or gasoline engine equipment shall be left running under trees or left parked under trees within their drip line.
- E. Refer to Section 01 56 39 for tree protection.

1.9 SECURITY

- A. The University will not accept any responsibility for damage or loss of Contractor's or subcontractors' equipment or materials stored on any project related site caused by vandalism, nature, or otherwise, suffered by Contractor or subcontractors. Protection of all construction, equipment, stores, and supplies shall be the sole responsibility of Contractor.

1.10 ACCESS ROADS AND PARKING AREAS

- A. Construction Access: The University reserves the right to control paths of access to the Work. In general, access to work areas will be permitted only over areas involved in this work from where they connect to existing paved roads.
- B. Contractor shall obtain the permission of The University's Representative before pioneering any access. Where additional access is permitted, the limits set by The University's Representative and only types of equipment approved by The University's Representative will be allowed in these areas.
- C. Parking:
 - 1. Vehicles belonging to Contractor and persons or firms with whom Contractor is doing business shall be parked within the Project boundary or designated staging areas. Contractor shall exercise complete control over all vehicles entering upon the Project site of the Work and designate and maintain appropriate parking areas within the site. Parking will not be permitted within drip lines of existing trees. Under no circumstances are any vehicles to encroach on open spaces or on parking spaces/areas or streets outside Project boundary or staging areas designated by The University.
 - 2. If the Project boundary will not accommodate Contractor's parking needs, Contractor may have limited use of parking facilities on campus in conformance with campus Parking Office requirements. Contractor shall obtain and pay for an "A" lot parking permit designation for each vehicle at the campus Parking Office prior to using campus parking facilities. Permits may be purchased on a daily or long-term basis and are valid for "A" Parking Lots.
 - 3. **See the 'Contractor and Vendor Parking Protocol' issued by Transportation and Parking Services at the end of this section for further information and clarification.**
<https://taps.ucsc.edu/parking/contractor-parking.html>

1.11 VEHICLE AND EQUIPMENT EMISSIONS CONTROLS

- A. Construction equipment that burns cleaner fuels (e.g., natural gas, ethanol) shall be used whenever available.
- B. Electrical equipment should be used in preference to petroleum-fueled equipment whenever practicable.
- C. Idling time for construction equipment not actively in use shall be limited to a maximum of 5 minutes

- D. Schedule construction equipment operation and minimize the simultaneous operation of multiple pieces equipment at a construction site to avoid concentrations of emissions.

1.12 TEMPORARY CONTROLS

- A. Contractor shall provide and maintain suitable temporary barricades, fences, directional signs, or other structures as required for protection of public traffic; provide walks around any obstructions made in public places in carrying on the Work covered by the Contract; maintain from the beginning of twilight through the whole of every night on or near the obstructions, sufficient light and guards to protect travelers from injury to the satisfaction of The University's Representative.
- B. Noise Control and Abatement: The University shall require that construction activities be limited to a schedule that minimizes disruption to noise-sensitive uses on the project site and in the vicinity through implementation of a noise mitigation program. Prior to initiation of construction activities, a construction noise mitigation program shall be prepared and submitted to the University for review and approval. The program shall include, but not be limited to, the following:
 - 1. Construction activities during daytime and evening hours (7:00 AM to 10:00 PM) shall not occur within 150 feet of sensitive receptors, when feasible. Construction activities within 500 feet of sensitive receptors activities shall not occur during nighttime hours (10:00PM to 7:00 AM).
 - 2. Whenever possible, academic and administrative staff, as well as residents who will be subject to construction noise, shall be informed one (1) week before the start of each construction project (phase). Notices of the dates and hours of anticipated construction shall be posted in academic and administrative buildings within 100 feet of construction noise sources at least one (1) week before the start of each construction project (phase).
 - 3. Loud construction activity as described above within 100 feet of an academic or residential use shall, to the extent feasible, be scheduled during holidays, spring break, or summer break.
 - 4. To reduce noise impacts from construction, the University shall require that construction contractors muffle or otherwise control noise from construction equipment through implementation of the measures below.
 - 5. Internal combustion engines used for any purpose at the construction sites shall be equipped with a muffler of a type recommended by the manufacturer.
 - 6. Equipment used for construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible);
 - 7. Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for construction shall be hydraulically or electrically powered wherever feasible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used. Such mufflers can lower noise levels from the exhaust as much as 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures such as using drilling equipment rather than impact equipment shall be implemented whenever feasible.
 - 8. Stationary noise sources shall be located as far from sensitive receptors as feasible. If they must be located near sensitive receptors, they shall be muffled to the extent feasible and/or, where practicable, enclosed within temporary sheds.
 - 9. A temporary wooden wall shall be placed around construction activity areas that are within 100 feet of sensitive receptors to provide additional noise attenuation, where feasible. The wall should impede the direct line of site between the noise sources and sensitive receptors.
 - 10. Construction equipment shall be properly maintained and has been outfitted with feasible noise-reduction devices to minimize construction-generated noise.
 - 11. Laydown and construction vehicle staging areas shall be located at least 100 feet away from noise-sensitive land uses as feasible.

12. Stationary noise sources such as generators or pumps shall be located at least 150 feet away from noise-sensitive land uses as feasible.
13. Refer also to Section 01 35 43 – Environmental Mitigation.

C. Drainage and Erosion and Sediment Control During Construction:

1. Maintain all portions of Work free from standing water at all times during construction.
2. Where required, construct temporary drainage ditches, berms, or pumping systems to divert drainage water from Project site; ensure resultant water is carried to nearest vegetated area and infiltrated without causing erosion or siltation to surrounding area.
3. Ensure all stormwater leaving the project site is free of sediment to prevent silting of existing sinkholes and water courses, and designated environmentally sensitive areas.
4. Remove and dispose of silt which is deposited as result of Work of this Project to the satisfaction of The University's Representative at no additional cost to The University.
5. Refer to Section 01 57 13 – Temporary Erosion and Sediment Control (For Projects Under One Acre) or Section 01 57 23 – Temporary Storm Water Pollution Control (For Projects One Acre or More) for further requirements.

1.13 TRAFFIC REGULATION

- A. Traffic will be controlled using methods specified by CALTRANS, and occur during hours permitted by The University.
- B. Traffic may be reduced to one lane during the work day with appropriate use of Contractor-provided flag person with the consent of The University's Representative.
- C. Construction Parking Control: Distribution of available parking shall be the Contractor's responsibility.
- D. Flag persons at Access Routes: Provide as required to signal and regulate traffic to and from the Project site. All flag persons shall wear blaze orange or similar color vests.
- E. Provide flares, lights and temporary traffic signals as may be required to ensure safe traffic conditions on access roads in immediate vicinity of construction.
- F. Haul Routes: The University reserves the right to designate haul routes in the event construction traffic conflicts with The University's operations or interferes with normal campus traffic. Truck-trailers may be parked off site in designated Campus areas or locations approved by The University's Representative.
- G. All speed limits, stop signs, and other traffic regulations shall be followed at all times.
- H. Traffic control routes and site access ways shall be as indicated on the drawings. Sketches for the construction of certain detours in areas not indicated on the drawings shall be submitted to the University's Representative for acceptance.
- I. No construction activity that involves movement of vehicles or heavy equipment on or off road will be allowed during night hours, that is, from 30 minutes after sunset to 30 minutes before sunrise unless approved by The University's Representative.
- J. The Contractor shall coordinate with The University's Representative to minimize the number and extent of simultaneous construction activities that affect driveways, paths, and roadways. The Contractors shall provide a plan and schedule for daily construction activities a week in advance, and will observe this plan and schedule to the greatest extent feasible.

1.14 DUST PALLIATION

- A. The Contractor shall take appropriate steps throughout the term of the Project, such as watering, to prevent air borne dust due to work under this Contract in accordance with Monterey Bay Air Resources District regulations and shall apply the following MBARD recommended mitigation measures during construction as appropriate to the site. No chemical palliatives shall be used without permission of The University's Representative. Contractor shall provide, at the Contractor's expense, all water spreading operations for dust palliation. Water for dust palliation will be provided by the University and paid for by the Contractor in accordance with Section 01 51 00 – Temporary Utilities.
1. Water all active construction areas at least twice a day and at least three (3) times daily during the months of February through November. Frequency shall be based on the type of operation, soil, and wind exposure
 2. Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).
 3. Pave, apply water two (2) times a day, or apply non-toxic soil stabilizers to all unpaved access roads, parking areas, and construction staging areas.
 4. Sweep daily with water sweepers any paved access roads, parking areas, and staging areas at construction sites.
 5. Sweep streets daily with water sweepers if visible soil material is carried onto adjacent public streets.
 6. Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas or previously graded areas left inactive for ten days or more.
 7. Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.).
 8. Limit traffic speeds on unpaved roads to 15 miles per hour.
 9. Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
 10. Replant vegetation in disturbed areas as quickly as possible.
 11. In the event that grading and excavation at two or more large project sites is proposed to occur concurrently (large sites defined as involving more than 2 acres), install wheel washers at the entrance of the construction sites.
 12. Phase construction projects in such a manner that minimizes the area of surface disturbance (e.g., grading, excavation) and the number of vehicle trips on unpaved surfaces.
 13. Prohibit all grading activities during periods of high wind (over 15 mph).
 14. Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
 15. Apply non-toxic binders (e.g., latex acrylic copolymer), as appropriate, to exposed areas after cut and fill operations and hydroseed area.
 16. Cover inactive storage piles.
 17. Install wheel washers at the entrances to construction sites for all exiting trucks.
 18. Damp-sweep streets if visible soil material is carried out from the construction site.
- B. The Contractor shall post a publicly visible sign that specifies the telephone number and person to contact regarding dust complaints. This person shall respond to complaints and take corrective action within 48 hours. The phone number of the Monterey Bay Unified Air Pollution Control District shall be visible to ensure compliance with Rule 402.
- C. The Contractor will control all run-off and airborne materials on site. Only clean rainwater is allowed to leave the site.
- D. The Contractor will be responsible for providing employees applying dust control materials with appropriate personal protective equipment to protect them from injurious exposures.

- E. The Contractor will be responsible for training all employees applying chemical palliatives, in the proper application procedures and of the hazards to which they may be exposed.
- F. Whenever possible the Contractor shall use alternatives which are less likely to create dusty conditions.
- G. The Contractor is responsible to dispose of all contaminated refuse in accordance with Federal, state and local requirements.
- H. Compressed air in excess of 30 psi will not be used for cleaning purposes. Appropriate personal protective equipment, i.e., eye and hearing protection will be used during use of compressed air for cleaning.
- I. Any work creating airborne materials which are, or could be, combustible will be performed in such a manner so as not to create a fire or explosion hazard. Such materials will be removed from the Project site and stored or taken off-site by use of methods which will control fire or explosion hazards.

1.15 OVERLOADING

- A. If Contractor shall cause, permit or allow any roadway, structure, or utility element to be overloaded by shoring, piling, or setting thereon, any material or equipment, or by performing thereon any of Contractor's work, Contractor shall do so at Contractor's sole risk and Contractor shall be solely responsible for any and all loss, damage and/or injury arising or resulting there from. Improper use of high energy compaction equipment shall be regarded as a form of overloading as defined under this paragraph.

1.16 HAULING EQUIPMENT AND ROUTES

- A. Hauling over existing roads (paved or unpaved) shall be done only with vehicles and loads which are normally permitted on State Highways. "Off road" type haul equipment and illegal State loads will not be permitted.
- B. Haul Routes: The University reserves the right to designate haul routes in event construction traffic conflicts with the University's operations or interferes with normal campus traffic.
- C. Off-campus within the City of Santa Cruz, project-related hauling will be confined to City-designated truck routes.

1.17 CARE OF PRESENT BUILDINGS, GROUNDS AND UTILITIES

- A. Contractor shall be held responsible, so far as Contractor's operations are concerned, for the care and preservation of the adjacent premises, plant life, landscaping, utilities walks, streets and coterminous property. Any parts of them injured, damaged, or disturbed because of Contractor's work shall be promptly repaired, replaced, or cleaned to the satisfaction of The University's Representative at Contractor's expense.
- B. Any and all existing roads, curbing, utility poles, underground utility lines, etc., damaged by Contractor in the execution of this Contract shall be restored to former condition by Contractor to the satisfaction of The University's Representative at no change in the Contract Price.

- C. Known existing underground utilities are shown or noted on the Drawings. It shall be Contractor's responsibility to protect these utilities and Contractor shall repair at Contractor's expense, any such utilities damaged by Contractor's operation.
- D. Disrupted utilities shall be restored to service promptly by continuous effort, including overtime, at no cost to The University. Permanent repairs may be delayed to normal hours if temporary service restoration meets health, safety, and campus operational requirements.

1.18 CARE OF CONTRACTOR'S WORK

- A. Contractor shall be responsible for damage to any of Contractor's work prior to final acceptance. Contractor shall adequately protect all conduit openings, trenches, ditches, equipment and materials to prevent obstructions, breakage, misuse, or disfigurement during construction, insofar as possible.
- B. All surfaces, structural or finish, which are exposed to view in the completed building or structure, and all items of equipment shall be completely protected from damage during the construction phase by Contractor, who shall take all necessary precautions to ensure that the Project is turned over to The University entirely free from scratches, abrasions, dents, drips, gouges, stains, water marks, paint or oil runs, or similar types of damage.
 - 1. Wherever such damage does occur, and before the final inspection of the building by The University's Representative, Contractor shall, at no expense to The University and under the direction of The University's Representative, completely remove the damaged work and replace it in conformance with the Contract Documents.
- C. All methods of protection shall be selected by Contractor, and maintained in good condition, until each element so protected is ready for the next phase of the work, or until it is prepared for final cleaning.
- D. All protection shall be carefully removed so as to cause no damage to the protected element or area.

1.19 WEATHER PROTECTION

- A. Contractor shall at all times protect the excavation and trenches from damage by rain water, spring water, or backup up of drains or sewers, as detailed in the Contractor's Storm Water Pollution Prevention Plan (see Section 01 57 13 – Temporary Erosion and Sediment Control (For Projects Under One Acre) or Section 01 57 23 – Temporary Storm Water Pollution Control (For Projects One Acre or More)). Contractor shall provide pumps and equipment and enclosures to provide this protection. The building structures and interior finishes and furnishings shall be protected by Contractor from rain, dew, wind, and all other elements of the weather during periods when roof areas are unprotected by roofing, and when breaches are present in the exterior walls. Such areas shall be covered with weather tight tarpaulins firmly secured or by other approved methods. See Division 31 - Earthwork, for drainage control requirements.

1.20 MATERIALS STOCKPILING

- A. Areas as close as practicable to the work areas will be designated by The University's Representative for stockpiling of materials. Materials shall not be stockpiled except at sites acceptable to, and approved by, The University's Representative. Proper management and protection of all material stockpiles will be detailed in the contractor's Storm Water Pollution Prevention Plan (see Section 01 57 23).

- B. Materials that must be sheltered for proper storage shall be stored in Contractor furnished temporary structures.

1.21 PROJECT IDENTIFICATION AND SIGNS

- A. Signboards: No advertising matter shall be attached or painted on surfaces of building, fences, barricades, or canopies.
- B. The University will provide standard campus project sign for installation by the Contractor, as directed by the University's Representative.

1.22 FIELD OFFICES AND SHEDS

- A. The University will not furnish required office space to Contractor.
- B. Field Offices: Contractor shall provide and maintain at the Project site for the entire construction period at least two temporary field offices for the proper administration of this Work. Location on the site shall be acceptable to the University's Representative. Costs of both field offices shall be borne by the Contractor. Responsibility for the cost of utilities for both field offices shall be as specified in Section 01 51 00 – Temporary Utilities.
 - 1. One temporary field office shall be for the Contractor's use.
 - 2. One temporary field office, a minimum of 12 feet x 40 feet, shall be for The University's Representative and The University's use. The field office shall be equipped with functioning toilet facilities and with electric light and power, heating and air-conditioning systems, window blinds and security bars over windows.
- C. Storage: Contractor shall provide all structures required at the Project site for safe and proper storage of tools and materials. These structures shall be placed only at locations acceptable to the University, and approved by The University's Representative. Contractor shall remove all such structures from the site at completion of the Work.

1.23 HOUSEKEEPING

- A. During the course of construction, alteration, or repairs, form and scrap lumber with protruding nails, and all other debris, shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures.
- B. Combustible scrap and debris shall be removed at regular intervals during the course of construction. Safe means shall be provided to facilitate such removal. No combustible scrap or debris shall be stacked or placed within ten feet of buildings or structures.
- C. Containers shall be provided by the Contractor for the collection and separation of recyclable materials, waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily flammable or hazardous waste, such as caustics, acids, harmful dusts, etc., shall be equipped with covers. Hazardous waste shall be stored and disposed of in accordance with Federal, state and local regulations. Garbage and other waste shall be disposed of at frequent and regular intervals.
- D. Containers shall be provided by the Contractor for the collection and separation of recyclable materials, waste, trash, oily and used rags, and other refuse. Containers used for garbage and other oily flammable or hazardous waste, such as caustics, acids, harmful dusts, etc., shall be

equipped with covers. Hazardous waste shall be stored and disposed of in accordance with Federal, state and local regulations. Garbage and other waste shall be disposed of at frequent and regular intervals.

1.24 MISCELLANEOUS CONTROLS

- A. Provide keying different from permanent keying of locks and include organized, locked, and supervised storage for receiving and dispensing items of builder's hardware throughout construction period.
- B. The University's Representative's Access: Provide The University's Representative and The University with keys necessary to gain access to locked areas of the Work. The University's Representative will be responsible for such keys and will return them to the Contractor at the time of final inspection. If The University elects to use its own locks and keys, the Contractor shall double-lock gates as required.
- C. All accidents involving employees of the Contractor and employees of lower tier contractors must be reported to the University's Representative within 24 hours of the occurrence.
- D. Hours of Operation: No Work, including deliveries, is to be performed on the Project site before 7:00 a.m., after 7:00 p.m., or on Saturdays, Sundays or University holidays, without prior written authorization of The University's Representative. Holidays shall be those days designated by The University as University holidays.
- E. There are fifteen (15) University holidays from January to December. Provide for one (1) calendar day for each holiday during the Contract Time period. Verify the exact day of each University holiday with The University's Representative.
- F. Expect traffic delays on April 20, 2020.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

UC SANTA CRUZ
Contractor and Vendor Parking Protocol

Transportation and Parking Services

Issuing Officer: Assistant Director, Transportation and Parking Services

Responsible Officer: Director, Transportation and Parking Services

Effective Date: July 1, 2016

I. PURPOSE OF PROTOCOL

The primary objectives of this protocol are:

- To define a process by which UCSC Project Managers can arrange for parking, establish staging areas, and/or reserve parking spaces for contractors or construction projects on UCSC-owned property.
- To define a process for vendors to legally park on campus while conducting university-related business.
- To ensure parking requirements are consistent for all customer groups while providing adequate staging areas for construction needs.

II. DEFINITIONS

For the purposes of this protocol, the following definitions shall apply:

Construction equipment – equipment used in the actual construction process; e.g., forklifts, front-end loaders, concrete trucks, cranes, backhoes, and dump trucks.

A/Construction permit – this permit allows contractors and vendors to park in A or R parking spaces, in parking spaces reserved for the primary's project, in metered spaces for the maximum posted time without additional payment, or to park out of marked spaces as necessary. Contractors or vendors purchasing these permits directly from the TAPS Sales office in unmarked vehicles may require authorization from the Project Manager or Physical Plant supervisor before a permit is issued.

Contractor Staging permit – this permit allows a vehicle to park in reserved parking/staging areas. Emergency repair – service that must be provided immediately; delay will result in risk of damage or injury. Once the situation is under control, it is no longer an emergency.

Fenced construction or staging site – an authorized area or space that is fenced off to store construction materials or construction equipment specifically used on the construction site, and/or for contractor vehicles. (The East Remote overflow lots managed by Physical Planning, Development & Operations fall into this category.) Fenced areas are under the purview of the general contractor; permits are not required, and Parking Enforcement will not patrol fenced areas. If fenced areas cover marked parking spaces, or block access to those spaces, the project will be charged a daily rate.

Limited Construction permit – this permit allows authorized contractors and vendors to park out of marked spaces only.

Project Manager – a representative of UCSC who is the primary campus contact for a project or service that requires private contractors.

Reserved parking/staging area – a non-fenced area, in or out of marked parking spaces, authorized for parking vehicles or storing construction materials or equipment. The Project Manager will work with TAPS staff (and affected Building Coordinators as necessary) to determine an appropriate area, which TAPS will

then post with appropriate signage. Vehicles parked in these spaces must display a valid Contractor Staging permit.

Staging site permit – permits issued by Physical Planning, Development & Operations or Physical Plant for use in fenced areas.

Vendor – individuals or companies who have a service contract or agreement with UCSC and require access to the campus.

III. PROTOCOL STATEMENT

Because parking on the UCSC campus is at a premium, especially during business hours, close-in permit parking spaces will only be used for construction- or service-related purposes when other options are unavailable or ineffective. Whenever possible, contractors will park in fenced areas created specifically for their project that do not block access to marked parking spaces, or in the East Remote Overflow lots #1–#4, which are owned and operated by Physical Planning, Development & Operations.

General Information

- All personal and construction vehicles used for commuting to campus (including the construction project site) must display a valid TAPS parking permit unless they are parked within a fenced construction area.
- Vehicles parked on UCSC property are subject to all UCSC Police Department and Parking Enforcement regulations.
- It is the responsibility of the Project Manager to inform contractors and sub-contractors of the requirements and restrictions for parking on UCSC property. It is the responsibility of the general contractor to obtain all necessary parking permits and distribute them to their employees.
- Reserved parking/staging areas must be coordinated with TAPS prior to use, and must be posted by TAPS with appropriate signage. Any changes to the initial staging configuration must be approved in advance by TAPS.
- Citations received for improper parking on campus are the responsibility of the individual the vehicle is registered to, unless the construction company wishes to pay for the citation. Failure to obtain parking permits will not be a valid reason to contest a citation. Project Managers should not commit to contractors that citations will be dismissed.
- Any vehicles temporarily parked outside of marked parking spaces along sidewalks or roadways must maintain at least a 20-foot clearance to allow for emergency vehicles to safely pass. They may not block curb cuts or any part of an accessible path of travel unless said area is inside a fenced construction site.
- The contractor is responsible for parking surface damage that requires resurfacing, and all restriping of spaces due to erosion from construction material or heavy equipment. The contractor is also responsible for reinstalling signs or meter poles that have been damaged or removed, and must contact the campus Sign Shop to ensure signage complies with campus standards.
- Costs associated with reserved parking/staging areas and Contractor Staging permits will be borne by the Project Manager's department. It is up to the UCSC Project Manager (or Physical Plant Supervisor) whether to cover the cost of A/Construction or Limited Construction permits or pass that cost along to the contractor or vendor.

- A/Construction, Limited Construction, and Contractor Staging permits can be issued to a company or contractor name, or to a project number.
- Parking in loading docks is limited to 30 minutes, even with construction-related permits, unless the loading dock is appropriately designated as a Reserved Parking/Staging area.
- TAPS is not responsible for any lost, stolen, or damaged property.

Process:

- 1) Project Manager (or Physical Plant Supervisor) provides parking-related information to TAPS Event Parking Coordinator.
- 2) TAPS provides parking contract that includes a detailed cost estimate for space/services requested.
- 3) Project Manager arranges for appropriate parking permits:
 - a. Staging Site Permit (for fenced areas outside of TAPS purview) through PPDO or Physical Plant
 - i. If off-pavement areas will be affected, both Grounds and Campus Planning must be consulted ahead of time.
 - b. Contractor Staging Permit (for use in TAPS-designated areas or parking spaces) can be created and printed using TAPS interactive PDF.
 - c. A/Construction or Limited Construction permits (for use in or out of marked parking spaces) are purchased through the TAPS Sales Office:
 - i. Contractor can purchase an A/Construction or Limited Construction permit directly. Project Managers can authorize a Limited Construction permit by sending an email to tapssales@ucsc.edu.
 - ii. Project Managers can purchase via recharge by sending an email to tapssales@ucsc.edu with the following information:
 - 1) Project name
 - 2) CFR or Work Order Number (Physical Plant), or CFR or Account Number (PP&C)
 - 3) Permit type (A/Construction or Limited Construction)
 - 4) Project Manager's signature block that includes job title and department name
- 4) Project Manager communicates parking requirements to contractors, and distributes permits as necessary.
 - a. If recharge permits are to be picked up by the contractor at the Sales Office or Kiosk, please email tapssales@ucsc.edu with the company or vendor name, and the start and end dates.
- 5) TAPS posts designated staging areas or reserved parking spaces at least 48 hours in advance. Photos will be taken of areas or spaces used for staging at that time to document condition.
- 6) Communication:
 - a. TAPS will send map of designated areas, dates, and sign text to Project Manager and Parking Enforcement.
 - b. Project Manager will communicate any changes in scope or duration of project to TAPS and Parking Enforcement.
- 7) Payment/Billing:
 - a. Construction Staging costs: Project Managers provide TAPS with FOAPAL information at the beginning of the process, and TAPS recharges the appropriate departments on a quarterly basis.
 - b. A/Construction or Limited Construction permits: Project Managers provide TAPS Sales Office with recharge information, and expenses will be transferred monthly.

IV. COMPLIANCE

This protocol is consistent with the UCSC Traffic and Parking Code, and is in compliance with applicable campus policies and procedures.

V. APPLICABILITY AND AUTHORITY

This policy applies to all contractors and vendors without exception.

This protocol supersedes all previous construction parking policies, including the TAPS Policy on Construction Project Staging and Parking (dated 9/10/13).

VI. EXCEPTIONS TO PROTOCOL

Contractors needing to park to perform emergency repairs will not be required to display a valid UCSC parking permit of any type. Police Dispatch should be notified of any emergency repairs taking place.

Questions about this protocol should be directed to the TAPS Assistant Director at 831-459-3759

DRAFT

CONTRACTOR / VENDOR PARKING OPTIONS 2016-17

rev. 6/23/16

FLEXIBLE OPTIONS

NON-FLEXIBLE OPTIONS

A/Construction

May park in A, B, or R permit spaces; in University Vehicle spaces; or out of marked spaces.
May not park in loading docks for more than 30 minutes.

DAILY SCRATCHER (recharge only)

UP TO THREE MONTHS



Limited Construction

May NOT park in any marked parking space.
May not park in loading docks for more than 30 minutes.

DAILY SCRATCHER (recharge only)

UP TO THREE MONTHS



Contractor Staging Permit



Allows vehicle to park in TAPS-designated staging areas or in parking spaces reserved and signed for construction staging permits.

PP&C Staging Site Permit



Issued by PP&C to park in their fenced staging areas.

\$7/day

\$10/day

END OF SECTION 01 50 00

DRAFT

SECTION 01 51 00

TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 UTILITIES

- A. Description:
 - 1. Provide and maintain temporary utilities for construction operations and related necessary temporary structures. Remove them when they are no longer needed.
 - 2. Pay for connections for water and electricity to Project site sources.
- B. The Contractor shall submit a plan of proposed temporary utilities before installation. Included in this plan shall be a plan of proposed water conservation measures as per Paragraph 2.1 below.
- C. Requirements of Regulatory Agencies:
 - 1. Install and use temporary utilities in accordance with the following:
 - a. California Electrical Code
 - b. California Mechanical Code
 - c. California Plumbing Code
 - d. Federal, State and local codes and regulations.
 - e. Utility company requirements.
- D. The University makes no representation or guarantee that any utility provided by the University will be adequate in either quantity or quality for Contractor's needs.

PART 2 - PRODUCTS

2.1 MATERIALS

- 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 Code Requirements.
- B. Temporary Utilities:
 - 1. Provide all equipment, including metering, connections, transformers, and other materials as shown in the Contract Documents for extending the utility lines to where they will be used.
 - 2. Contractor will be charged for use of existing utilities as follows:
 - a. Water: The University will provide a water meter for connection to existing campus water system at a designated hydrant, and all water used by the Contractor for the Project will be so measured. The University will deduct for water usage by deductive Change Order. Water (combined water and sewer) will be billed at a rate between \$19.00 and \$21.00 per hundred cubic feet (CCF). The Contractor shall submit a plan of proposed water conservation measures for approval prior to commencement of

- construction. All prevailing City of Santa Cruz ordinances governing water use and conservation shall be used as a guide for minimum water use by the Contractor.
- b. Electricity: Contractor shall provide an electrical meter to be approved by the University, and all electrical power used by the Contractor will be so measured. Contractor shall attach label showing multiplier factor to the face of the meter. The University will deduct cost of power from Contract Price by deductive Change Order. Use of electricity will be billed at the prevailing standard billing rates charged by Pacific Gas & Electric Co., in affect at the time of use.
3. Contractor shall provide all distribution lines, wiring, switches, outlets, service piping, fittings, valves, backflow prevention devices, and other appurtenances necessary for the connection and distribution of temporary utilities within the Project site. Written approval by The University, via The University's Representative, is required. Temporary water shall be separated from domestic water supply by an above ground reduced pressure principle backflow prevention device approved by The University, via The University's Representative, and UCSC Campus Environmental Health and Safety Office. Contractor shall make provisions for water released from backflow prevention device to conform to required SWPPP procedures. All excavations and trenches for temporary utilities shall be backfilled and compacted. All temporary utilities shall be approved by The University's Representative prior to installation. On completion of work, all temporary utilities shall be removed, trenches backfilled and compacted as specified in Division 2, and all areas restored to natural condition.
 4. Points of connection for temporary power, telephone, and water are as follows:

EDIT THE FOLLOWING PARAGRAPHS TO SUIT THE PROJECT NEEDS AND LOCATION.

- a. **Water:** Coordinate with The University's Office of Physical Planning and Construction via The University's Representative.
 - b. **Power:** Connect to the source with a fused disconnect switch and electrical meter. Route overhead power to the Project site via utility grade poles properly installed and braced. Provide sufficient clearance for service vehicle access to the transformer. Schedule power connection and disconnection to avoid impact to existing facilities. Coordinate with the University's Office of Physical Planning and Construction via The University's Representative.
 - c. **Telephone and Data:** Route to the Project site via utility grade poles properly installed and braced. Arrange for installation and activation directly with service provider of choice.
- C. Temporary Heat, Exhaust, and Ventilation:
1. Provide temporary exhaust and ventilation equipment adequately sized and configured to provide sufficient volumetric air quantities and air changes for the work in progress.
 2. Provide adequately sized and configured temporary heating, exhaust, and ventilation equipment as required to maintain adequate environmental conditions to meet specified minimum conditions for installation of materials and to protect equipment, materials, and finishes from damage due to temperature or humidity.
 3. Provide adequately sized and configured forced exhaust air from and ventilation air to enclosed areas to cure installed materials, to prevent excessive humidity, and to prevent hazardous accumulations of dust, fumes, vapors, or gases.

CONSIDER DELETING THE FOLLOWING PARAGRAPH FOR SMALLER PROJECTS.

- D. **Temporary Telephone and Data Service:**

1. **Telephones:** Contractor shall provide, pay for, and maintain at least one (1) telephone at the Project site for the entire construction period as follows:
 - a. Minimum of one (1) telephone in Contractor's field office for Contractor's own business use.
2. **Data:** University will provide the point of connection for Ethernet or fiber optic network access. Contractor to provide necessary cabling, terminations, and network equipment in Contractor and UCSC field offices as follows:
 - a. Minimum of one (1) data line in Contractor's field office for Contractor's own business use.
 - b. One (1) data line in the University's Representative's and the University's field office.
- E. **Temporary Water:** Install piping with taps located so that water is available throughout the Project site by the use of hoses. Protect piping and fittings against freezing. Contractor shall provide appropriate backflow prevention devices to separate Drinking Water (Potable) from Industrial Water used on the Project site by hoses.
- F. **Drinking Water:** Contractor shall provide clean, sanitary, and adequate drinking water facilities for the entire period of construction. Potable water and individual drinking containers for employees must be made available by the Contractor.
- G. **Temporary Sanitary Facilities:**
 1. Contractor shall install and maintain in a sanitary condition suitable toilets and hand washing station for use of workers. These toilets and hand washing stations shall be placed in location acceptable to The University's Representative.
 2. There shall be a minimum of one (1) toilet and (2) hand washing stations for each multiple of twenty (20) Contractor's employees and subcontractors, or fractional part thereof, working at the Project site.
- H. **Temporary Fire Protection:**
 1. Provide and maintain fire protection equipment including extinguishers, fire hoses, and other equipment as necessary for proper fire protection during the course of the Work.
 2. Use fire protection equipment only for fighting fires.
 3. Locate fire extinguishers in field offices, storage sheds, tool houses, temporary structures, and other buildings throughout the Project site, and/or as directed by the Campus Fire Marshal. Refer to Section 01 50 00 – Temporary Facilities and Controls for additional requirements and locations.
 4. Assign a qualified person with authority to maintain fire protection equipment, institute fire prevention measures, and direct the prompt removal of combustible and waste material.
 5. Refer to Section 01 50 00 – Temporary Facilities and Controls.

PART 3 - EXECUTION

3.1 COORDINATION:

- A. Comply with applicable requirements specified in Divisions 21 - Fire Suppression, 22 - Plumbing, 23 - Heating, Ventilating, and Air-Conditioning; and 26 - Electrical, 33 - Utilities.
- B. Maintain and operate systems to provide continuous service.

- C. Modify and extend systems as required.
- D. Removal and Reconditioning:
 - 1. Remove all temporary services installed as a requirement of the Contract Documents. Restore utilities to their original condition at the completion of the Work.
 - 2. Legally and properly dispose of all debris resulting from removal and reconditioning operations.

END OF SECTION 01 51 00

DRAFT

SECTION 01 56 39

TREE PROTECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes, but is not necessarily limited to:

1. Tree protection
2. Tree identification
3. Trimming tree limbs and branches
4. Root pruning
5. Raising fringe of trees
6. Grading around trees
7. Incidental extra work
8. Debris removal
9. Protective chain-link fence relocation or removal
10. Preventing spread of sudden oak death, pitch canker, noxious weeds

B. Related Sections:

1. Barriers and Enclosures: Section: 01 50 00 – Temporary Facilities and Controls
2. Division 02: Existing Conditions

1.2 QUALITY ASSURANCE

A. Standards of workmanship shall conform to those recommended by:

1. University of California, Division of Agriculture and Natural Resources, "Pruning Landscape Trees," 1981, publication #2574.
2. American National Standards Institute (ANSI), Section 133.1, "Tree Trimming and Removal."
3. International Society of Arboriculture (ISA).
4. National Arborist Association.

1.3 PROJECT CONDITIONS

A. Visit the Project site and determine conditions under which work will be performed.

B. Do not begin work until meeting with The University's Representative on the Project site to confirm tree locations and work to be performed.

C. Protection: Provide adequate protection of existing trees against damage from construction operations.

1. Install barricades for all trees, a 6-foot-high chain-link fence. Locate fence at or beyond tree drip lines (outside edge of tree branching) of items so protected, or as indicated on tree work drawing.
2. Especially protect roots, trunk, and foliage of existing trees.

3. Do not permit the following:
 - a. Using trees as support posts, power poles, sign posts, or anchorage for ropes, guy wires and power lines or other similar functions.
 - b. Poisoning items by disposing of paint, petroleum products, dirty water or other deleterious materials on or around trees.
 - c. Compaction of tree root area by moving trucks, grading, machines, storage of equipment, gravel, earthfill, supplies, etc.; within the tree drip line (outside edge of tree branching).
 - d. Damage to trunk or limbs caused by maneuvering vehicles or stacking material and equipment too close to them.

- D. Compensation for Planting Loss: Any tree to remain, damaged or destroyed due to the Contractor's negligence or failure to provide adequate protection shall be compensated for in accordance with the following schedule of values, using "tree-caliper" method (greatest trunk diameter measured 30-inches above ground):
 1. For trees or shrubs with diameters up to and including 6 inches, actual cost of replacement with items similar in species, size and shape, including:
 - a. Actual cost of item boxed out of ground.
 - b. Transportation or delivery of boxed item to the Project site.
 - c. Planting and staking.
 - d. Maintenance in watering, fertilizing, pruning, pest control and other care to bring replacement to same general conditions as original item.

 2. For trunks up to:

<u>Size (in inches)</u>	<u>\$ Amount</u>
7	1,200.00
8	1,700.00
9	2,200.00
10	2,600.00
11	3,100.00
12	3,600.00
13	4,100.00
14	4,600.00
15	5,000.00
16	5,500.00
17	6,000.00
18 and over, add for each caliper inch:	600.00

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Tree Wound Dressing: Prior to any application, The University's Representative shall approve material and application.

- B. Protective Fencing: 6-foot-high galvanized chain link. See Section 01 50 00 – Temporary Facilities and Controls.

PART 3 - EXECUTION

3.1 TREE IDENTIFICATION

VERIFY THAT TREES TO REMAIN AND TREES TO BE REMOVED ARE ADEQUATELY LABELED IN THE DRAWINGS.

- A. Existing Trees: The existing trees to be preserved are the trees as shown on the Drawings to remain. Verify exact location of existing trees in relation to the layout of new buildings before work begins.
- B. Identification of trees to be removed or to remain that have not been so marked on the Drawings is subject to the approval of the University's Representative.
- C. No trees are to be removed without prior approval of The University's Representative.

3.2 TRIMMING TREES

- A. No limbs are to be removed without prior approval of The University's Representative.
- B. Notify The University's Representative when a tree limb is in conflict with the construction.
- C. "Trim" shall be interpreted as follows:
 - 1. Removal of dead branches 1/4 inch and over in diameter.
 - 2. Removal of all dead and live stubs 1/4 inch and over in diameter.
 - 3. Removal of all broken branches, all loose branches and other debris lodged in trees.
 - 4. Removal of undesirable sucker growth.
 - 5. Removal of all live branches which interfere with the tree's structural strength and healthful development. These include:
 - a. Limbs which rub and abrade a more important branch.
 - b. Limbs of weak structure which are not important to the frame work of the tree.
 - c. Limbs with twigs and foliage obstructing development of more important branches.
 - d. Limbs near the end of limbs which produce more weight than the limb is likely to support.

3.3 ROOT PRUNING

- A. Avoid root cutting to prevent disruption of the trees water and nutrient carrying capacity and the natural stability based on balance of radial or sinker root system.
- B. Notify The University's Representative if root cutting becomes necessary.
- C. Avoid tearing or ripping tree roots due to excavation activities.
 - 1. Where root cutting is necessary, no roots are to be cut without prior approval of The University's Representative.
 - 2. Where root cutting becomes necessary, all roots are to be clean cut with a saw, lopping shears or proper tree pruning device. Under no circumstance are tree roots to be left splintered or the ends shredded.

3.4 REMOVING TREES

- A. No trees are to be removed without prior approval of The University's Representative.
- B. "Removing Trees" shall be interpreted as removing tree to the ground level and reducing the stump a minimum of two (2) feet below grade, using a suitable mechanical stump chipper. In order to prevent damage to root systems of remaining adjacent trees, use of a tractor for reduction of stumpage will not be permitted. Trees which are to be removed are indicated on the drawings.

3.5 RAISING SOIL LEVEL

- A. Soil placed on the surface around existing trees can create problems involving gaseous exchange in the root zone, crown rot and soil moisture. Soil aeration is a critical factor. Notify The University's Representative of any soil work under trees or adjacent to tree drip lines (outer edge of tree branching).

3.6 LOWERING SOIL LEVEL

- A. Removing soil from under a tree canopy can seriously damage roots and may even impair the stability of the tree. Notify The University's Representative of any soil work under a tree.

3.7 DEBRIS REMOVAL

- A. Dispose of all fallen debris present around trees subject to work under this section. All wood and debris resulting from the Contractor's operations shall become the property of the Contractor and shall be disposed of by the Contractor off University property.

3.8 TREE PROTECTIVE FENCING

- A. Provide fencing as indicated on the drawings and as called out for in this section.
- B. Install protective fencing and plywood protection adjacent to tree areas and utilities installation areas prior to commencing work in these locations.
- C. Relocation of protective fencing as a sequence of construction requires no additional cost to the University. Refer to Section 01 50 00 - Temporary Facilities and Controls.

3.9 PREVENTING SPREAD OF SUDDEN OAK DEATH AND OTHER PLANT DISEASES

- A. All tree and plant material removal, transport and disposal will comply with applicable CDF-recommended best management practices for avoiding spread of sudden oak death and other tree diseases, as set forth at:

<http://www.suddenoakdeath.org/wp-content/uploads/2010/08/ForestryGuidelines1.pdf>

- B. Santa Cruz County is infested with sudden oak death. All forested areas should be assumed to be infested.

- C. To the greatest extent feasible, avoid working in vegetated and forest areas during wet conditions. Avoid working around trees and vegetation under muddy conditions. Used paved or rocked work areas and roads to the greatest extent possible.
- D. Plant material should be moved outside of the project site only in consultation with the Campus arborist.
- E. To the extent practical and feasible, route equipment away from host plants and trees (see http://www.fire.ca.gov/resource_mgt/downloads/SuddenOakDeathForestPraticeMitigations.pdf). Locate equipment sites away from host plants.
- F. For any vehicle leaving the project site, and that will be traveling to un-infested areas, each time a piece of equipment or a vehicle leaves the site it should be inspected by operations personnel for host plant debris (leaves, twigs, branches).
- G. After work in an infested area, remove or wash off accumulations of soil, mud and organic debris from boots, shoes, vehicles and heavy equipment before traveling to un-infested areas. Lysol or a bleach solution can be used to disinfest shoes.
- H. In infested areas, topsoil removed during excavation shall be stockpiled and used to refill the trench on site if it is suitable as backfill.

END OF SECTION 01 56 39

SECTION 01 57 13

TEMPORARY EROSION AND SEDIMENT CONTROL
(For Projects Under One Acre)

PART 1 - GENERAL

1.1 SUMMARY

- A. Construction projects resulting in land disturbance of less than one acre: Contractor shall comply with this section including procedures, requirements and guidelines for Contractor designed, installed, and maintained Erosion and Sediment Control Plan (ESCP) and other storm water quality control measures
- B. Related Sections:
 - 1. Section 01 35 00 - Special Project Procedures
 - 2. Section 01 41 00 - Regulatory Requirements
 - 3. Section 01 42 19 - Reference Standards
 - 4. Section 01 50 00 - Temporary Facilities and Controls
 - 5. Division 31 – Earthwork
- C. References:

Best Management Practice for Construction Projects Disturbing Less Than 1 Acre in Area at the end of this section.

1.2 SUBMITTALS

- A. Prior to mobilization or the commencement of any work on the Project site, and no later than 10 days after issuance of the Notice to Proceed, submit to the University Representative the Erosion and Sediment Control Plan (ESCP) for review. Refer to Section 01 33 00 - Submittal Procedures.
- B. At the completion of The University's Representative review, a meeting will be conducted by The University's Representative with the Contractor to discuss and agree upon the implementation of the plan.
- C. A review for completeness by the University does not relieve the Contractor from full responsibility for its effectiveness.
- D. Additional measures or modification of proposed measures may be required by the University prior to acceptance of the erosion control plan.
- E. All project site ESCP documentation (living, updated documents) shall be provided to the University Representative before a Notice of Completion will be filed.
- F. Contractor shall amend the Erosion Control Plan whenever there is a change in construction or operations that may affect the discharge of pollutants to surface waters.

1.3 STORM WATER QUALITY CONTROL REQUIREMENTS

A. General:

1. The Contractor is responsible for storm water quality within the Project site and storm water quality leaving the project site, staging area or anywhere Project construction disturbs soil or stages materials.
 - a. Prevent erosion of disturbed areas during construction and until permanent planting, drainage and erosion control measures will provide long term protection.
 - b. Prevent pollutants, including sediment, from leaving the Project site, either water-borne, air-borne, on the tires of vehicles, or by spillage from off-site hauling of soils.
2. Provide all material, labor, equipment for installation, implementation, and maintenance of all erosion control measures.
3. No earth disturbing work shall begin until the ESCP has been reviewed by the University for completeness and the plan has been implemented.
4. The University may stop operations if it is determined that the site Erosion and Sediment Control Plan (ESCP) is not being implemented adequately to protect water quality.
5. The Contractor shall bear all costs associated with the design, installation and maintenance of all BMPs and implementation of the ESCP document.
6. Progress payments, acceptance of project, and/or final payment may be delayed pending proper installation of measures identified in the final ESCP.
7. Erosion and Sediment Control Plan (ESCP)
 - a. It is the Contractor's responsibility to prepare the Erosion and Sediment Control Plan (ESCP) in compliance with all requirements of these contract documents.
 - b. A preliminary Draft Erosion and Sediment Control Plan (ESCP) may be included in the reference documents solely for the convenience of the Bidder of Contractor. These preliminary/ draft documents communicate one approach to the project, they may be incomplete and are not meant for construction.

B. Erosion and Sediment Plan Requirements:

1. The ESCP must, at a minimum, include all best management practices (BMP's) listed in reference document, Appendix D: Best Management Practice for Construction Projects Disturbing Less Than 1 Acre in Area, which are applicable to the project.
2. Plans shall be of sufficient clarity to indicate the nature and the extent of the work proposed. They must show in detail that it will conform to the provisions of this chapter and all relevant laws and regulations. The plans shall include, at a minimum, the following information in writing and/or diagrams:
 - a. Description of the project
 - b. General location of the proposed site
 - c. North arrow and scale
 - d. Limits of work and contours of the site including finish contours to be achieved by grading
 - e. Staging Area including location of port-a-potty, material storage, and BMPs
 - f. Existing and proposed storm water system including drainage channels
 - g. Delineation of areas to be cleared during development activities

- h. Location, as applicable, of proposed Best Management Practices, including all applicable BMPs from Appendix D
- i. Permanent Best Management Practices for all surfaces exposed or expected to be exposed during development activities (i.e. mulch, hydroseed)
- j. Dewatering Plan
- k. Name, address and phone number of Contractors responsible person(s)
- l. Name, address, and phone number of person who prepared the plan
- m. Proposed inspection form and schedule
- n. For projects which are expected to commence or continue during the rainy season, the erosion control plan must be prepared by a registered civil engineer or by a Certified Professional Erosion and Sediment Control Specialist

C. Inspection and Compliance

- 1. Contractor is responsible for performing regular inspections of project site to ensure compliance with these standards. At a minimum, inspections should be performed:
 - a. Before, during, and after a 50% chance 0.25" forecast rain event
 - b. Once per week during rainy season (October-May)
 - c. Once per month during non-rainy season (June-September)
- 2. The University will conduct inspections to ensure compliance with this chapter. Including the following:
 - a. Pre-site Inspection
 - b. Operation Progress Inspections
 - c. Final Inspection

D. Training Requirements

- 1. The Contractor shall train its employees working on the project on the requirements contained in this section. Contractor shall document this training in writing.

E. Use of Permanent Stormwater Best Management Practices

- 1. Contractor shall not allow any non-storm water from the project to enter the storm drain system. Examples of non-storm water include water used for dust suppression, pipe flushing and testing, water used to wash painting and drywall equipment, and any other wash water uses.
- 2. Any existing storm water facilities including low impact development features or structural devices such as detention facilities which appear in the contract documents may be utilized in the Storm Water Pollution Prevention Plan on the condition that they are temporarily modified to serve the Contractor's purposes, then cleaned and returned to their original configuration before Project completion.
- 3. Storm water facilities have been designed for The University's use in storm water management upon completion of the Project and shall not be considered as adequate for control during construction except by the independent determination of the Contractor.
- 4. Sinkholes, drainages, and environmentally sensitive areas are considered part of the University permanent stormwater system.
- 5. In the instance that traditional erosion and sediment controls are not effective at removing pollutants before discharge, the use of an Active Treatment System (ATS) may be necessary.

F. Planted Areas:

1. Contractor shall warrant that all seeded areas planted under this Contract will be healthy and in flourishing condition of active growth six (6) months from date of substantial completion. Grasses shall be 95 percent minimum weed free and free of dead or dying patches.
2. Replace, without cost to University and as soon as weather conditions permit, all areas larger than 12 inches square where soil is bare or where grasses are not in thriving condition as determined by the University's Representative. Replacement seeding shall match that originally specified, and water as required to germinate replacement seed.
3. Contractor shall be responsible, and bear all costs, for repair to any erosion to the finished graded areas.

G. Stop Work Notices

1. If the University determines that activities are being carried out in violation of the contract, it may stop work until corrective measures have been completed.

H. Notification of Violation

1. Whenever the University determines that a violation of this section exists, the University will notify the responsible person in writing. Such written notification may require that certain conditions be adhered to in the correction of the violation. These may include, but are not limited to, the following:
 - a. Use of Permanent Stormwater Best Management Practices:
 - 1) Any existing storm water facilities including low impact development features or structural devices such as detention facilities which appear in the contract documents may be utilized in the Storm Water Pollution Prevention Plan on the condition that they are temporarily modified to serve the Contractor's purposes, then cleaned and returned to their original configuration before Project completion.
 - 2) Storm water facilities have been designed for The University's use in storm water management, upon completion of the Project, and shall not be considered as adequate for control during construction except by the independent determination of the Contractor.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

BEST MANAGEMENT PRACTICES FOR CONSTRUCTION PROJECTS DISTURBING LESS THAN 1 ACRE IN AREA

All Construction Sites

- Delineate clearing limits, sensitive or critical areas, trees, drainage courses, and buffer zones to prevent excessive or unnecessary disturbance and exposure of soil.
- Identify all storm drains, swales, drainages, and creeks located near the construction site and make sure all subcontractors are aware of their locations to prevent pollutants from entering them.
- Preserve existing vegetation, where required and when feasible, to the maximum extent practicable.
- Phase grading operations, to the extent possible, to limit areas of disturbance and time of exposure
- Avoid and/or minimize impacts of excavation and grading during wet weather and immediately preceding expected wet weather.
- Align temporary and permanent roads and driveways along slope contours.
- Implement water conservation practices including repairing water leaks promptly and avoiding using water to clean construction areas
- Prepare a dewatering plan for projects constructed during the rainy season
- Train employees and inform contractors and subcontractors about storm water management requirements and their responsibilities for compliance. Keep training sign-in sheets with plan documents.

Minimize Soil Movement

- Stockpiled soil and materials should be covered and stabilized with geotextile fabric, erosion control blankets or hydroseeding. Tarps should only be used as temporary stockpile protection.
- Create a berm or install silt fencing or fiber roll around stockpiled materials to prevent storm water runoff from transporting sediment offsite.
- Use campus standard erosion control seeding, planting, mulching, geotextile fabric and/or erosion control blankets to stabilize disturbed soil and reduce the potential for erosion.
- Use other soil stabilizers as approved by the University Representative.

Structures to Control and Convey Runoff

- Avoid contaminating clean runoff from areas adjacent to your site by using berms and/or temporary or permanent drainage ditches to divert water flow around the site.
- Convey runoff by use of earth dikes, drainage swales and/or ditches when feasible.
- Use slope drains to collect and convey water for discharge below slopes when feasible.
- Use velocity dissipation devices, flared culvert end sections and/or check dams to reduce runoff velocity and mitigate erosion when feasible.

Capture Sediment

- Use terracing, riprap, sand bags, rocks, approved temporary vegetation and/or other approved BMP's on slopes to reduce runoff velocity and trap sediments. Do not use asphalt rubble or other demolition debris for this purpose.
- Protect storm drain inlets from sediment-laden runoff. Storm drain inlet protection devices include gravel bags, filter fabric fences and block and gravel filters.

Other Runoff Controls

- Temporary sediment basin
- Sediment trap
- Brush or rock filter
- Silt fence
- Sand or gravel bag barrier

Tracking Control

- Implement measures as necessary to minimize tracking of soil off site.
- Use dry sweeping methods when cleaning sediments from streets, driveways and paved areas by hand. When using mechanical street sweepers, use fine water spray to reduce dust and improve sediment removal while minimizing runoff.

Paint Work

- Do not clean paint brushes or rinse paint containers into a street, gutter, storm drain, or creek.
- For water-based paints, paint out brushes to the extent possible and rinse to a drain leading to the sanitary sewer (*i.e.*, indoor plumbing).
- For oil-based paints, paint out brushes to the extent possible, and filter and reuse thinners and solvents. Dispose of unusable thinners, oil-based paint, sludges and residue as hazardous waste.
- Non-hazardous paint chips and dust from dry stripping and sand blasting may be swept up or collected in plastic drop cloths and disposed of as trash. Chemical paint stripping residue and chips and dust from marine paints or paints containing lead or tributyl tin must be disposed of as a hazardous waste.
- When stripping or cleaning building exteriors with high-pressure water, cover or berm storm drain inlets. Collect (mop or vacuum) building cleaning water for disposal in a pre-authorized manner.
- Recycle, return to supplier or donate unwanted water-based (latex) paint.
- Dried latex paint may be disposed of in the trash.

Cement and Concrete Work

- Avoid mixing excess amounts of fresh concrete or cement mortar on-site.
- Store dry and wet concrete and cement under cover, protected from rainfall and runoff.
- Wash out concrete transit mixers only in designated wash-out areas. Whenever possible, recycle washout by pumping back into mixers for reuse or off-site yard for recycling. Do not dispose of washout into the street, storm drains, drainage ditches, or creeks. Designated wash-out areas must be maintained to prevent over flow.
- Wash down exposed aggregate concrete only when the wash water can: (1) flow onto a dirt area that is not vegetated or part of planting plan; (2) drain to a bermed area where it can be pumped/vacuumed and disposed of properly
- Allow aggregate rinse to settle, and pump the water to the sanitary sewer if allowed by your local wastewater authority.
- Do not wash sweepings from exposed aggregate concrete into a street or storm drain. Collect and return to aggregate base stockpile or dispose with trash.

Roadwork/Pavement

- Apply concrete, asphalt, and seal coat during dry weather to prevent contaminants from contacting stormwater runoff.
- Cover storm drain inlets and manholes when paving or applying seal coat, slurry seal, fog seal, and similar materials.

- Always park paving machines over drip pans or absorbent materials, since they tend to drip continuously.
- When making saw-cuts in pavement, use as little water as possible. Cover potentially affected storm drain inlets completely with filter fabric during the sawing operation and contain the slurry by wet-vacuuming, or by placing straw bales, sandbags, or gravel dams around the catch basins. After the liquid drains or evaporates, shovel or vacuum the slurry residue from the pavement or gutter and remove from site.
- Recycle broken concrete and asphalt.

Hazardous Material Spill Prevention, Spill Reporting and Response

- All hazardous materials shall be stored so that they are protected from inclement weather and vandalism.
- Motor vehicles shall not be fueled on the Project site.
- Spill containment measures must be made prior to fueling when fueling equipment other than motor vehicles.
- Vehicle maintenance, other than emergency repairs, shall not be performed on the Project site.
- Appropriate emergency spill containment supplies shall be maintained on site by the Contractor.
- Spills greater than one quart shall be immediately reported to The University's Representative and UCSC's Project Inspector.
- Spills shall be diked or contained by trained personnel to prevent the spilled hazardous material from entering the storm water system or leaving the Project site.
- Spills of less than five (5) gallons shall be absorbed using an appropriate material. All contaminated materials shall be containerized, removed from Campus and disposed in accordance with Federal, state and local regulations.
- Spills in excess of five (5) gallons shall be absorbed using an appropriate material and placed in containers under the direction of UCSC's Office of Environmental Health and Safety.
- Any contaminated soil shall be removed by the Contractor and replaced with acceptable fresh soil.
- Response shall be carried out by appropriately trained personnel utilizing safe practices.

Good Housekeeping Practices

- Do not wash down pavement or surfaces where silt has been deposited or materials have spilled. Use dry cleanup methods.
- Cover exposed construction materials and wastes when not in use or at the end of every day.
- Before it rains, sweep and remove materials from surfaces that drain to storm drains, creeks, or channels.
- Place trash cans around the site to reduce potential litter. Dispose of non-hazardous construction wastes in covered dumpsters or recycling receptacles. Recycle leftover materials whenever possible.
- Dispose of all wastes properly. Materials that cannot be reused or recycled must be taken to an appropriate landfill or disposed of as hazardous waste, as appropriate.
- Cover open dumpsters with plastic sheeting or a tarp at the end of every day. Secure the sheeting or tarp around the outside of the dumpster. If the dumpster has a cover, close it.
- Wash vehicles at an appropriate off-site facility. If equipment must be washed on-site, use wash down areas developed for specific site requirements and approved by the University Representative. Do not use soaps, solvents, degreasers, or steam cleaning equipment, and prevent wash water from entering storm drains.

Inspection

- Project site inspections must be completed:
 - before every 50% chance of rain
 - during every measureable rain event
 - after every measureable rain event

- or at minimum weekly
- Keep all inspection records with plan documents

Sources Of Additional Information

Additional information on Construction Site Controls is available in the publications listed below

- ✓ California Stormwater Quality Association - California Storm Water Best Management Practice Handbook – Construction <http://www.cabmphandbooks.com/>
- ✓ Caltrans. 2003. Storm Water Quality Handbooks – Construction Contractors Guide and Specifications http://www.dot.ca.gov/hq/construc/stormwater/CSBMPPM_303_Final.pdf

END OF SECTION 01 57 13

DRAFT

SECTION 01 57 23

**TEMPORARY STORM WATER POLLUTION CONTROL
(For Projects One Acre or More)**

PART 1 - GENERAL

1.1 SUMMARY

- A. Construction projects resulting in land disturbance of one acre or more or is part of a larger common plan of development: Contractor shall comply with this section including procedures, requirements and guidelines for Contractor designed, installed, and maintained Storm Water Pollution Prevention Plan (SWPPP) and other storm water quality control measures.
- B. Related Sections:
 - 1. Section 01 35 00 - Special Project Procedures.
 - 2. Section 01 41 00 - Regulatory Requirements.
 - 3. Section 01 42 19 - Reference Standards.
 - 4. Section 01 50 00 - Temporary Facilities and Controls.
 - 5. Division 31 - Earthwork.

1.2 SUBMITTALS

- A. Submit, no later than ten (10) days after issuance of the Notice to Proceed, to the University Representative the Storm Water Pollution Prevention Plan (SWPPP) and Notice of Intent (NOI) for review. Refer to Section 01 33 00 - Submittal Procedures.
- B. At the completion of The University Representative's review, a meeting will be conducted by the University Representative with the Contractor to discuss and agree upon the implementation of the plan.
- C. A review for completeness by the University does not relieve the Contractor from full responsibility for its effectiveness.
- D. Additional measures or modification of proposed measures may be required by the University prior to acceptance of the SWPPP.
- E. All project site SWPPP documentation (living, updated documents) shall be provided to the University Representative before a Notice of Completion will be filed.
- F. Contractor shall amend the Storm Water Pollution Prevention Plan whenever there is a change in construction or operations that may affect the discharge of pollutants to surface waters.

1.3 STORMWATER QUALITY CONTROL REQUIREMENTS

- A. General:
 - 1. The Contractor is responsible for storm water quality within the Project site and storm water quality leaving the project site, staging area or anywhere Project construction disturbs soil or stages materials.

- a. Prevent erosion of disturbed areas during construction and until permanent planting, drainage and erosion control measures will provide long term protection.
 - b. Prevent pollutants, including sediment, from leaving the Project site, either water-borne, air-borne, on the tires of vehicles, or by spillage from off-site hauling of soils.
2. Storm Water Pollution Prevention Plan (SWPPP)
- a. It is the Contractor's responsibility to prepare the Storm Water Pollution Prevention Plan (SWPPP) in compliance with all requirements of the State Water Resources Control Board and these contract documents.
 - b. A preliminary Draft Storm Water Pollution Prevention Plan (SWPPP) may be included in the reference documents solely for the convenience of the Bidder of Contractor. These preliminary/draft documents communicate one approach to the project, they may be incomplete and are not meant for construction.
- B. Storm Water Pollution Prevention Plan Requirements:
1. As this project disturbs one acre or more of soil, the Contractor shall comply with all State Construction Storm Water Program requirements identified at http://www.swrcb.ca.gov/water_issues/programs/stormwater/construction.shtml
 - a. These requirements include the development of a Storm Water Pollution Prevention Plan (SWPPP) and preparation, for submittal by the University, of a Notice of Intent (NOI) to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity.
 - b. At the conclusion of the project, the Contractor shall prepare, for submittal by the University, a Notice of Termination (NOT) to end coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity. State Water Resources Control Board may require the Contractor to complete an Annual Report, for submittal by the University, before their submittal of a NOT will be accepted.
 - c. The Storm Water Pollution Prevention Plan (SWPPP) document shall be inclusive of both the requirements in Specification Section 01 57 23 and the requirements set by the State Water Resources Control Board.
 - d. Contractor must use the California Storm Water Quality Association (CASQA) Storm Water Pollution Prevention Plan Template.
 - e. The SWPPP document shall be completed and signed by a Qualified SWPPP Developer (QSD) as defined by the General Construction Permit.
 - f. Contractor's Qualified SWPPP Developer shall register as a data submitter on the State Water Board's Storm Water Multiple Application and Report Tracking System (SMARTS) website and provide the University Representative the User ID.
 - g. The SWPPP shall comply with the requirements outlined in the current version of the Waste Discharge Requirements for discharges of Storm Water Runoff Associated with Construction Activities, as provided by the State Water Resources Control Board General Construction Storm Water Permit: http://www.swrcb.ca.gov/water_issues/programs/stormwater/constpermits.shtml
 2. Submit the Storm Water Pollution Prevention Plan to The University's Representative for review with adequate time prior to scheduled implementation. Refer to Section 01 33 00 - Submittal Procedures. At the completion of The University's Representative review, a meeting will be conducted by The University's Representative with the Contractor to discuss and agree upon the implementation of the plan.
 3. Once all permit registration documents have been reviewed by the University the documents may be uploaded to the State Water Resources Control Board via the SMARTS website.

4. The permit fee must be received by the State Water Resources Control Board before a Waste Discharge Identification (WDID) Number will be issued. The contractor is responsible for all associated fees.
5. No earth disturbing work shall begin until a Waste Discharge Identification Number (WDID) has been assigned to the project by the State Water Resources Control Board and the plan has been implemented.
6. All project site SWPPP documentation (living, updated documents) shall be provided to the University Representative before the Annual Report and the NOT are submitted to the State Water Resources Control Board.
7. The Contractor shall bear all costs associated with the development of the SWPPP document, NOI, NOT, Annual Reports, and other required documents, as well as implementation.
8. Agreement to the plan by other parties does not relieve the Contractor from full responsibility for its effectiveness and compliance with applicable regulatory requirements.

C. Use of Permanent Stormwater Best Management Practices

1. Any existing storm water facilities including low impact development features or structural devices such as detention facilities which appear in the contract documents, may be utilized in the Storm Water Pollution Prevention Plan on the condition that they are temporarily modified to serve the Contractor's purposes, then cleaned and returned to their original configuration before Project completion.
2. Storm water facilities have been designed for The University's use in storm water management upon completion of the Project, and shall not be considered as adequate for control during construction except by the independent determination of the Contractor.

D. Planted Areas:

1. Contractor shall warrant that all seeded areas planted under this Contract will be healthy and in flourishing condition of active growth six (6) months from date of final acceptance. Grasses shall be 95 percent minimum weed free and free of dead or dying patches.
2. Replace, without cost to University and as soon as weather conditions permit, all areas larger than twelve (12) inches square where soil is bare or where grasses are not in thriving condition as determined by the University's Representative. Replacement seeding shall match that originally specified, and water as required to germinate replacement seed.
3. Contractor shall be responsible, and bear all costs, for repair to any erosion to the finished graded areas.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 57 23

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Unless otherwise specifically provided elsewhere in the Contract Documents, all materials, equipment, and articles incorporated in the Work shall be first grade, new and delivered (where practicable) to the job in original containers or cartons. Each article or equipment specified shall be the latest product as listed in printed catalog data of latest date, and shall be the standard product of a single manufacturer.
- B. All material and equipment incorporated in the Work shall be:
 - 1. In condition acceptable to The University's Representative.
 - 2. Suitable for intended use.
- C. Keep materials clean, dry and undamaged.

1.2 TRANSPORTATION AND HANDLING

- A. All products shall be delivered, stored and handled in accordance with manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft. Contractor shall control delivery schedules to minimize long-term storage at the Project site and to prevent overcrowding of construction spaces. In particular, Contractor shall coordinate delivery and installation to ensure minimum holding or storage times for items known or recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.
- B. Products shall be delivered to the Project site in the manufacturer's sealed original container or other packaging system, clearly labeled with manufacturer's name, brand, grade seal or model number, and instructions for handling, storing, unpacking, protecting and installing.
- C. Promptly remove damaged or defective products from the Project site and replace with no adjustment of Contract Sum.

1.3 STORAGE AND PROTECTION

- A. When delivered and before installation, all materials shall be provided with protection as required to prevent damage. All surfaces shall be kept clean and free from dirt and stains. Deliveries to the Project site shall be made only during the hours indicated herein.
- B. Products shall be stored at the Project site in a manner that will facilitate inspection and measurement of quantity or counting of units.
- C. Heavy materials shall be stored away from the Project structure in a manner that will not endanger the supporting construction.

- D. Store manufactured products in accordance with manufacturers' instructions and with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weather tight enclosures.
 - 2. Maintain temperature and humidity in accordance with manufacturers' recommendations.
- E. Exterior Storage:
 - 1. Store materials and equipment above ground on blocking or skids to prevent soiling, staining and damage.
 - 2. Cover products which are subject to damage by the elements with impervious protective sheet coverings. Provide adequate ventilation to prevent condensation.
 - 3. Store sand, rock, or aggregate material in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- F. Periodically inspect stored products to assure that products are maintained under specified conditions and are free from damage and deterioration.
- G. Protection After Installation:
 - 1. Prevent damage to materials and equipment.
 - 2. Use whatever protective materials or methods are necessary to prevent damage to installed products from traffic, construction operations, and weather. Remove protection when no longer required.
 - 3. Maintain temperature and humidity conditions in interior spaces for the work in accordance with manufacturers' instructions for the materials and equipment being protected.

1.4 STANDARD PRODUCTS

- A. Unless otherwise indicated in these Specifications, or favorably reviewed by The University's Representative, materials and equipment for the construction work shall be essentially the standard product of a manufacturer regularly engaged in the production of such materials and equipment or materials and equipment of comparable character.

1.5 UL LABEL

- A. Materials and equipment, for which Underwriters' Laboratories, Inc. standards have been established and their label service is available, shall bear the appropriate UL Label.

1.6 MANUFACTURERS' TRADE MARKS AND NAMES

- A. The University'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 with no adjustment of Contract Sum.

PART 2 - PRODUCTS

2.1 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

EDIT THE FOLLOWING PARAGRAPHS TO COORDINATE PROJECT ENVIRONMENTAL PERFORMANCE TO EITHER LEED, CALGREEN, AND THE UNIVERSITY MINIMUM REQUIREMENTS AS DESCRIBED IN CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

- A. Refer to Section 01 81 13 - LEED Requirements.
- B. Refer to Section 01 81 12 - CALGreen Requirements.
- C. Refer to Section 01 74 19 - Construction Waste Management and Disposal.

2.2 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.
 - 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 - 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 - 3. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.
- B. Product Selection Procedures:
 - 1. Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
 - 3. Products:
 - a. Restricted List: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered, unless otherwise indicated.
 - b. Non-restricted List: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with requirements in Section 01 25 00 - Substitution Procedures for consideration of an unnamed product.
 - 4. Manufacturers:
 - a. Restricted List: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered, unless otherwise indicated.
 - b. Non-restricted List: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed, or a product by an unnamed manufacturer, that complies with requirements. Comply with requirements in "Comparable Products" Paragraph for consideration of an unnamed manufacturer's product.

5. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in Section 01 25 00 - Substitution Procedures for consideration of an unnamed product by one of the other named manufacturers.
- C. Visual Matching Specification: Where Specifications require "match sample", provide a product that complies with requirements and matches University Representative's sample. University Representative's decision will be final on whether a proposed product matches.
 1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 01 25 00 - Substitution Procedures for proposal of product.
- D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 60 00

SECTION 01 71 23

FIELD ENGINEERING

PART 1 - GENERAL

1.1 FIELD MEASUREMENTS AND EXISTING CONDITIONS

- A. Contractor Responsibility: Exact field measurements are the responsibility of the Contractor. Any required off-sets, additional fittings, re-routing of existing or new work to provide a serviceable system within location shown, and to maintain manufacturer's recommended maintenance clearances, minimum code required clearances, head room and clearances to match existing construction, are responsibility of the Contractor.
- B. Layout of the Work:
 - 1. The Contractor shall employ, at the Contractor's own expense, a Registered Civil Engineer or Licensed Land Survey or approved by The University's Representative to make preliminary staking of the Project corners, and all major site development features including: roads, paths, parking lots, utility yards, surface storm water drainage improvements, utility manholes, vaults, valve boxes, catch basins, etc. Also included shall be the routing of all new underground utilities. Preliminary staking will be subject to approval of The University's Representative and shall be adjusted one (1) time at no additional cost to The University in order to obtain design intent of building location relative to existing grades and vegetation.
 - 2. Subsequent to approval of preliminary staking, the Contractor's engineer or survey or shall make final layout of the work of the Project and establish all reference points and elevations required for construction.
 - 3. Subsequent to approval, the Contractor shall submit "as laid-out" drawings which detail variations, if any, from original design location in reproducible form.
 - 4. The University's Office of Physical Planning, Development & Operations has on file all information which identifies the bench marks and monuments which are to be used for control of the Work. All stakes or other reference points set for the construction shall be set in accordance with said bench marks and monuments.
 - 5. Notify the University's Representative in writing immediately of any discrepancies.

1.2 GRADES, LINES AND LEVELS

- A. Datum: The Contractor shall provide all survey work necessary for accurate location, both horizontal and vertical, of the work from Project references shown on the Drawings. Exact locations, distances, elevations, etc., shall be governed by actual field conditions.
- B. Review: The Contractor's layout, i.e., location and alignment, of structures and facilities shall be reviewed by The University's Representative prior to any demolition, construction, or installation by the Contractor.
- C. Conflict: The Contractor will be held responsible for correctness of layout, for establishing location of existing concealed utility lines, and for notifying The University's Representative in writing in event of conflict with the Drawings. In such case the Contractor shall not proceed until directed by The University's Representative.
- D. Preservation: All stakes, boundary lines, bench marks or survey marks, etc., which have been or may be established in any part of the Project site or adjacent thereto shall be carefully preserved

and respected by the Contractor and shall be restored at the Contractor's expense if lost or destroyed as result of the Contractor's operations.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION: NOT USED

END OF SECTION 01 71 23

DRAFT

SECTION 01 73 29
CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Cutting and patching in floors, walls, and ceilings as required for new construction. Provide all cutting and patching required to complete Work and to:
1. Make its parts fit together properly.
 2. Uncover work to provide for installation of ill-timed work.
 3. Remove and replace defective work.
 4. Remove and replace work not conforming to Contract Documents.
 5. Remove samples of installed work as required for testing.
 6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.
- B. Related Sections:
1. Section 01 31 13 - Project Coordination: Coordination of sequence of work, spaces, and subcontractors
 2. Section 01 81 19 – Indoor Air Quality Requirements
Firestopping: Sealing penetrations in fire-rated construction

1.2 SUBMITTALS

- A. Shop Drawings: Prior to cutting of any structurally or visually significant portion of the Work, obtain written permission for exact location and size of openings from the University's Representative.
1. Before cutting into any portion of the structure, obtain written permission from the University's Representative for each hole to be cut or enlarged. Submit shop drawings indicating exact location and size of detail of reinforcement of such openings.
- B. Written Requests:
1. Submit a written request to University's Representative twenty-one (21) days of executing cutting or alteration which affects:
 - a. Work by the University or separate contractor.
 - b. Structural value or integrity of any element of Project.
 - c. Integrity of weather-exposed or moisture-resistant elements.
 - d. Efficiency, operational life, maintenance or safety of operational elements.
 - e. Visual qualities of sight-exposed elements.
 2. Request shall include:
 - a. Identification of Project and description of affected work.
 - b. Necessity for cutting or alteration.
 - c. Effect on work of the University or separate contractors, on structural integrity, or weatherproof integrity of Project.
 - d. Alternatives to cutting and patching.

- e. Cost proposal, when applicable.
- f. Written permissions of separate contractors whose work may be affected.
- g. Description of proposed work including.
 - 1) Scope of cutting, patching alteration, or excavation.
 - 2) Products proposed to be used.
 - 3) Extent of refinishing to be included.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Employ same installer or fabricator to perform cutting and patching work as employed for new construction for:
 - 1. Weather-exposed or moisture resistant elements.
 - 2. Sight-exposed finished surfaces.
- B. Standards: For seismic restraints of mechanical systems comply with SMACNA Manual unless more stringent requirements are indicated in Division 23.

1.4 SEQUENCING

- A. Coordinate all cutting and patching work.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide patching materials to comply with Specifications and standards for each specific product involved.
- B. Where Specifications and standards have not been provided, provide patching materials and fabrication to match adjacent construction and consistent with quality of Project and intended for commercial construction.
- C. Provide new materials for cutting and patching unless otherwise indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine existing conditions of Project, including elements subject to damage or to movement during cutting and patching.
- B. After uncovering work, inspect conditions affecting installation of products, or performances of work.
- C. Report unsatisfactory or questionable conditions to University's Representative in writing; do not proceed with work until University's Representative has provided further instruction.

3.2 PREPARATION

- A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of Work.
- B. Protect other portions of Project from damage.

3.3 CUTTING AND PATCHING

A. Cutting:

- 1. Perform cutting, associated structural reinforcing and patching in a manner to prevent damage to other Work, and to provide proper surfaces for the installation of new materials, equipment and repairs. Adjust and fit products to provide a neat installation.
- 2. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not allowed without prior written approval.

B. Patching:

- 1. Patch surfaces to match adjacent surfaces. Finish to nearest intersection. For an assembly, refinish entire unit.
- 2. Patch to achieve security; strength; weather protection, as applicable; efficiency, operational life, maintenance, and safety of operational elements; and to preserve continuity of existing fire ratings.
- 3. Patch surfaces to successfully duplicate undisturbed adjacent profiles, materials, textures, finishes and colors. Use materials which match existing construction.
- 4. Where there is dispute as to whether duplication is successful or has been achieved to a reasonable degree, the University's Representative's decision will be final.
- 5. Fit work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- 6. At penetrations of fire rated walls, partitions, ceilings, and floor construction completely seal voids with fire-rated material in accordance with U.L. specifications to full thickness of the penetrated element.

C. Finishing:

- 1. Finish or refinish, as applicable, cut and patched surfaces to match adjacent finishes. Replace materials which are damaged or abused and cannot be neatly repaired as a result of cutting and patching operations.
- 2. Refinish entire surfaces as necessary to provide even finish to match adjacent finishes:
 - a. For continuous surfaces, refinish to nearest intersection.
 - b. For an assembly, refinish entire unit.

- D. Painting: Paint over complete surface planes, unless otherwise indicated or directed. Over patched wall and ceiling surfaces, paint to nearest cutoff line for entire surface, such as the intersection with adjacent wall or ceiling, beam, or to nearest opening frame, unless otherwise indicated or directed. Painted surfaces shall not appear spotty or touched-up.

END OF SECTION 01 73 29

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

The University's minimum requirement is more stringent than CALGreen, and may be more stringent than minimum LEED. Coordinate Section 01 81 13 – LEED Requirements and all other Sections in the specifications with this section.

1.1 SUMMARY

- A. Environmental Issues: Project requires special Construction Waste Management Program:
 - 1. Requirement: Divert a minimum of 75 percent of project waste from landfill (weight basis). Excavated soil and land clearing debris shall be recycled or reused, but shall be excluded from the waste diversion calculation.
 - a. Project goal is to divert a minimum of 95 percent of project waste from landfill. Include building demolition waste in calculation.
 - 2. Extract and re-cycle materials from the waste stream.
 - 3. Effect optimum control of solid wastes.
 - 4. Prevent environmental pollution and damage.
- B. Related Work:
 - 1. Section 01 10 00 - Summary
 - 2. Section 01 50 00 - Temporary Facilities and Controls
 - 3. Section 01 77 00 - Closeout Procedures
 - 4. Section 01 81 12 - CALGreen Requirements
 - 5. Section 02 41 19 - Selective Structural Demolition
 - 6. Section 02 82 00 - Asbestos Remediation
 - 7. Section 01 81 13 - LEED Requirements (if required)

1.2 REFERENCES

- A. California Integrated Waste Management Board "C&D Debris Recyclers Database", available at: www.ciwmb.ca.gov/ConDemo/Recyclers
- B. Santa Cruz County Recycling Program (Tel. 831-454-2160). Information also available at: www.santacruzcountyrecycles.org
- C. United States Green Building Council Leadership in Energy and Environmental Design Green Building Rating System.

1.3 DEFINITIONS

- A. Inert Fill: A permitted facility that accepts inert waste such as asphalt and concrete exclusively.

- B. Class III Landfill: A landfill that accepts non-hazardous waste such as household, commercial, and industrial waste, including construction, remodeling, repair, and demolition operations.
- C. Clean: Untreated and unpainted; not contaminated with oils, solvents, caulk, or the like.
- D. Construction and Demolition (C&D) Waste: Includes solid wastes, such as building materials, packaging, trash, debris, and rubble resulting from land-clearing, construction, remodeling, repair, and demolition operations and other similar materials.
 - 1. Rubbish: Includes both combustible and noncombustible wastes, such as paper, boxes, glass, crockery, metal and lumber scrap, tin cans, and bones, and other similar materials.
 - 2. Debris: Includes both combustible and noncombustible wastes, such as leaves and tree trimmings that result from construction or maintenance and repair work, and other similar materials.
- E. Chemical Waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, organic chemicals and inorganic wastes, and other similar materials.
- F. Divert: To use material for any purpose other than disposal in a landfill or transfer facility for disposal.
- G. Sanitary Wastes: Garbage, including refuse and scraps resulting from preparation, cooking, distribution, or consumption of food, or other similar materials.
- H. Sewage: Domestic sanitary sewage.

1.4 GENERAL PERFORMANCE REQUIREMENTS

- A. The Contractor shall furnish labor, containers, transportation and payment of any disposal fees for materials removed during selective demolition and/or new construction and identified to be recycled.
- B. The Contractor shall prepare and submit a Construction Waste Management Plan that shall include a list of anticipated types and quantities of waste materials (weight basis) generated from the project site and proposed sitting location for waste containers.
 - 1. It is suggested that the USGBC LEED Template for "Construction Waste Management" be employed to plan, report and verify waste management requirements, or be utilized as a model waste management plan for projects where LEED is not a requirement.
 - 2. The Waste Management Progress Report shall be revised and re-submitted as required by the University's Representative.
 - 3. At a minimum, the Construction Waste Management Plan shall include the following categories: (a) type of waste to landfill, (b) amount of waste to landfill in tons (c) type of waste to be diverted, (d) how waste to be diverted will be processed, (e) amount of waste to be diverted per method of diversion, (f) total values of landfill waste in tons, (g) total value of waste diversion in tons, and as a percentage of total waste (h) total value of all waste, in tons.
- C. Review of Contractor's Construction Waste Management Program will not relieve Contractor of responsibility for control of pollutants and other environmental protection measures.

1.5 HAZARDOUS MATERIALS

- A. The University has identified all known hazardous substances in this project. Comply with requirements listed in the following Sections:
 - 1. Refer to individual Sections as appropriate.

1.6 SUBMITTALS

- A. Waste Management Plan (Non-Hazardous Materials) shall include:
 - 1. The Waste Management Plan shall include a list of anticipated types and quantities of waste materials generated from the Project site and proposed siting locations (including map) for waste/recycling containers. The plan shall identify materials to be recycled, re-used or salvaged. It shall include efforts at source reduction, material handling procedures and collection of weight and hauling destination information.
 - 2. Source Reduction: List processes that minimize waste such as working with suppliers to take back or buy back standard, rejected or unused items and to deliver supplies using returnable pallets and containers. Also include procedures to minimize breakage, mishandling, contamination, and other factors that reduce job site waste.
 - 3. Material Handling Procedures: List means by which source separated waste materials will be protected from contamination and the means for recycling them consistent with requirements for acceptance by designated facilities.
 - 4. Submit to the University Representative within 10 days after the Notice to Proceed and prior to any waste removal.
- B. Waste Management Progress Report:
 - 1. The Waste Management Progress Report shall include a summary of waste materials (recycled, salvaged, reused, disposed, etc.) by the Project. The Progress Report shall contain the amount of material (in tons) and the destination (landfill facility, material recovery facility, transfer station, used building materials yard, etc.) Attach weigh bills, disposal fees paid and other documentation confirming amount and disposal location of waste/recycled materials.
 - 2. Update monthly and submit on the first business day of each calendar month.
- C. Closeout Submittals:
 - 1. Update and resubmit the Waste Management Plan prior to final inspection. The final update shall include:
 - a. Total amount of waste in tons deposited at landfill from the Project and the identity of the transfer/landfill.
 - b. Total amount (in tons) of each material itemized by end-use including recycled, reused, or salvaged from the Project and the receiving party.
 - c. Total amount (in tons) of all materials diverted from landfill deposition itemized by method of diversion, including recycling, reuse or on-site deposition in tons.
 - d. Total percentage of material recycled in tons.

DELETE THE FOLLOWING PARAGRAPH FOR PROJECTS NOT REQUIRING LEED. A DIVERSION RATE OF 75% AS REQUIRED BY THE UNIVERSITY WILL RESULT IN THE APPROPRIATE LEED CREDIT.

- D. **LEED Submittal: LEED letter template for Construction Waste Management Credit, signed by Contractor, tabulating total waste material, quantities diverted and means by which it is diverted, and statement that requirements for the credit have been met.**

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

- A. Distribute copies of the Waste Management Plan to the University's Representative.
- B. Designate an on-site person responsible for instructing workers and overseeing sorting and recording of waste/recyclable materials. For LEED projects a LEED accredited professional, certified by USGBC is required.
- C. Meetings: Contractor shall conduct a Construction Waste Management meeting as a part of the pre-construction meeting. Meeting shall include subcontractors affected by the Waste Management Plan as well as the University's Representative.
- D. Recycling: Implement recycling program that includes separate collection of waste materials of following types as applicable to Project:
 - 1. Asphalt
 - 2. Land clearing debris
 - 3. Soil
 - 4. Trees and shrubs
 - 5. Concrete and concrete blocks
 - 6. Brick and masonry materials
 - 7. Untreated lumber
 - 8. Clean dimensional wood and palette wood
 - 9. Plywood, oriented strand board, and medium density fiberboard
 - 10. Paper - bond
 - 11. Paper (e.g. newsprint)
 - 12. Cardboard and paper packaging materials
 - 13. Plastics
 - 14. Rigid foam
 - 15. Insulation
 - 16. Ferrous metal
 - 17. Non-ferrous metals (e.g. copper, aluminum, etc.)
 - 18. Glass
 - 19. Gypsum board (unpainted)
 - 20. Carpet and pad
 - 21. Paint
 - 22. Beverage containers
 - 23. Plumbing fixtures
 - 24. Electrical fixtures and wires
 - 25. Others as noted on the Waste Management Plan that has been approved by the University.
- E. Separation of Waste: Recycling and waste bin areas shall be limited to areas approved on the Waste Management Plan. Recycling and waste bins are to be kept neat, clearly marked, and list acceptable and unacceptable materials in order to avoid contamination of materials.
- F. Handling: Keep materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to recycling process:
 - 1. Clean materials that are contaminated prior to placing in collection containers.
 - 2. Arrange for collection by or delivery to appropriate recycling center or transfer station that accepts construction and demolition waste for purpose of recycling.

END OF SECTION 01 74 19

DRAFT

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
1. Substantial Completion procedures
 2. Final completion procedures
 3. Project Record Documents
 4. Final cleaning
 5. Repair of the Work
 6. All University property issued to the Contractor for temporary use.

1.2 SUBSTANTIAL COMPLETION PROCEDURES

- A. Closeout Submittals: Prior to final payment and before The University's Representative issues a final Certificate for Payment, following shall be submitted as directed;
1. Maintenance Material (Extra Stock):
 - a. Where called for in the Specifications, deliver to The University at its designated storage location materials, etc., for use in maintenance work.
 - b. Provide list of materials and quantities delivered to The University indicating date and acceptance by The University.
 2. Evidence of compliance with requirements of governing authorities.
 3. Record of all inspections and tests.
 4. Project Record Documents.
 5. Operating and Maintenance Data, Instructions to The University's Personnel in suitable transfer cases.
 6. Evidence of Payment and Release of Liens.
 7. Guarantees, warranties, bonds, service and maintenance contracts in accordance with Section 01 78 30 – Guarantees, Bonds, Service and Maintenance Contracts.
 8. Document that all building flush out and commissioning requirements and procedures have been submitted, reviewed and completed.
 9. Evidence that the University's requirement for Construction Waste Diversion has been met. Refer to Section 01 74 19 – Construction Waste Management Disposal.
 10. Documentation that compliance with CALGreen requirements has been met and that CALGreen submittal information is up to date and complete.
 11. Documentation that compliance with all Sustainable Design requirements has been met and that all LEED submittal information is up to date and complete, if required.
- B. Final Adjustment of Accounts: Submit final request for payment to The University. The Contractor will prepare a final Certificate for Payment, reflecting approved adjustments to the Contract Sum not previously made by modifications. Final request shall reflect all adjustments to the Contract Sum as follows:

1. The original Contract Sum, including accepted alternates.
 2. Additions and deductions resulting from:
 - a. Previous modifications (Change Orders)
 - b. Unit prices
 - c. Deductions for uncorrected Work
 - d. Deduction for re-inspection payments
 - e. Retention
 - f. Other adjustments
 3. Total Contract Sum, as adjusted
 4. Previous payments
 5. Sum remaining due
- C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.
1. Advise The University's Representative of pending insurance changeover requirements.
 2. Make final changeover of permanent locks and deliver keys to The University's Representative. Advise The University's Representative of changeover in security provisions.
 3. Complete startup and testing of systems and equipment.
 4. Perform preventive maintenance on equipment used prior to Substantial Completion.
 5. Instruct the University's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 6. Advise The University's Representative of changeover in heat and other utilities.
 7. Participate with The University's Representative in conducting inspection and walkthrough with local emergency responders.
 8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 9. Complete final cleaning requirements, including touchup painting.
 10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, The University's Representative will either proceed with inspection or notify Contractor of unfulfilled requirements with a written list of deficiencies, (Punch List). The University's Representative will prepare the Certificate of Substantial Completion after inspection, or will notify the Contractor of items, either on Contractor's list or additional items identified by The University's Representative, that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for final completion.

1.3 FINAL COMPLETION PROCEDURES

- A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:
1. Submit a final Application for Payment according to Section 01 29 00 - Payment Procedures.

2. Certified List of Incomplete Items: Submit certified copy of The University Representative's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report and warranty.
 5. Instruct the University's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, The University's Representative will either proceed with inspection or notify Contractor of unfulfilled requirements. The University's Representative will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 PREREQUISITES TO FINAL PAYMENT

- A. Record Drawings: The Contractor shall be solely responsible for the maintenance and completion of Record Drawings. Comply with the following procedures:
1. Work shall be complete and the Contractor shall receive The University's Representative's acceptance of all phases of the Project.
 2. Deliver to The University's Representatives and receive The University's Representative's written acceptance of the following:
 - a. Written Guarantees
 - b. Record Drawings.
 - c. Record of all inspections and tests.
 - d. File of all operations and maintenance manuals.
 - e. All keys and entry access cards issued by the University to the Contractor for temporary use are returned to the University Representative. **Reference Key Liability Form at end of section.**
 3. Deliver to The University's Representative and receive The University's Representative's acceptance of The University's Inspection Card(s) with all applicable items thereon signed as having been duly inspected and satisfactorily completed.

1.5 PROJECT RECORD DOCUMENTS

- A. Record Drawings: The Contractor shall be solely responsible for the maintenance and completion of Record Drawings. Comply with the following procedures:
1. In the Contractor's job construction office, maintain one complete set of prints of the Project Drawings, Shop Drawings and Specifications which shall be recorded thereon by the Contractor.
 2. As the Work progresses, a complete and accurate notation of all deviations from the Drawings and Specifications, including but not limited to, work by Change Order, clarifications made via Letters of Instruction and Requests for Information (RFI's), shall be recorded thereon by the Contractor. Such indications shall be neatly made and kept current.

Where exact locations are critical, such as in the case of buried or concealed piping, duct, or conduit, said locations - both horizontal and vertical - shall be dimensioned.

3. The Contractor shall not request that inspection be made of any Work which has been installed in locations contrary to the Drawings until such deviations are properly noted on the Record Drawings by the Contractor.
4. The importance of keeping the Record Drawings accurately, neatly and current cannot be overstressed. The University's Representative may, if The University's Representative deems it necessary, withhold approval of periodic requests for payment if in The University's Representative's judgment, the provisions of this Section are not strictly adhered to. All such requests for payment will be approved immediately, assuming all other requirements of the Contract Documents are satisfied, upon the satisfactory current completion of the Record Drawings.
5. The Contractor shall employ, at the Contractor's own expense, a Licensed Land Surveyor to record and document the as-built locations of all major site development features, including both surface and underground utilities.
6. At the completion of the Project, and before the final request for payment is made and The University's Representative's approval obtained, the Record Drawings shall be completed by the Contractor. All of the indications on the prints shall be transferred by the Contractor to reproducible sets of Drawings. All Record Drawing information shall be made on the reproducible sets by an experienced computer aided drafting (CAD) technician. The cost of the reproducible sets shall be borne by the Contractor.
7. Any CAD/BIM files used by Contractor in generating or producing the Record Drawings set shall be provided to the University Representative on compact disk (CD) at the time of delivery of the Record Drawings. CD shall include all CAD/BIM files in two (2) distinct file formats: native AutoCAD file format (.dwg), and print format (.pdf) with optical character recognition (OCR). Both file formats shall be preset to plot in the same sheet size as Construction Documents.
8. Approval by The University's Representative of the Contractor's final request for payment shall be contingent upon the satisfactory completion and delivery to the University of the Record Drawings.

1.6 OPERATING AND MAINTENANCE DATA

- A. Contractor shall provide a digital copy via FTP site in PDF searchable format (.pdf) with optical character recognition (OCR) capability organized by specification section.
- B. Data Required:
 1. Manufacturers' Manuals: Complete installation, operation, maintenance and service manuals, instructions and parts lists for all materials and equipment. This includes, but is not limited to, such service manuals as may be sold by the manufacturer covering the operation and maintenance of the manufacturer's items, and complete replacement parts list sufficiently detailed for parts replacement ordering to the manufacturer.
 2. Equipment Nameplate Data: A list of all mechanical and electrical equipment showing all equipment nameplate data exactly. Identify equipment by means of names, symbols, and numbers used in the Contract Documents.
 3. System Operating Instructions: Written instructions covering operation of the entire system as installed (not duplicating manufacturers' instructions for operating individual components). Include schematic flow and control diagrams as appropriate and show or list system valves, control-elements, and equipment components using identification symbols and show proper settings for valves, controls and switches.
 4. System Maintenance Instructions: Type written instructions covering routine maintenance of the system. List each item of equipment requiring inspection, lubrication or service and briefly describe such maintenance, including types of lubricants and frequency of service. It is not intended that these instructions duplicate manufacturers' detailed instructions. Give

name, address and phone number of nearest firm authorized or qualified to service equipment or provide parts.

5. Wall Mounted Data: Frame one set of typewritten system instructions and diagrams as required under Paragraphs 3) and 4) above, covered with glass and mount in locations as directed by The University's Representative.
6. Permits to Operate (PTO): Permits to operate such items as elevators, emergency and standby generators, propane tanks, boilers, etc.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
 1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.

PART 3 - EXECUTION

3.1 INSTRUCTION OF THE UNIVERSITY'S PERSONNEL BY CONTRACTOR

- A. After Work under this Contract is completed, tested and prior to acceptance by The University and not less than five (5) days after submittal of the Operation and Maintenance Data required in the paragraph above, operate all systems during which time a qualified factory trained representative familiar with the items installed shall instruct and supervise The University's personnel in the operation and maintenance of the equipment and systems.
- B. Any instructions from manufacturers' representatives required under other Sections of the Specifications (refer to Section 01 91 00 – Commissioning) shall be conducted during this period. This instruction period shall be conducted after completion of all piping and equipment labeling is completed, reviewed, and accepted by The University's Representative.
- C. Contractor shall make all arrangements and issue notices for operation and instruction periods scheduled through The University's Representative. The Contractor shall provide a training agenda for review by the University Representative five (5) days in advance of the training session.
- D. This one (1) day, eight (8) hours, of instruction period is in addition and subsequent to any period of operation, testing and adjustment called for elsewhere in the Specifications.

3.2 FINAL CLEANING

- A. The Contractor shall provide final cleaning of the Work, including Mechanical, Electrical, Telecommunications Rooms, and similar support spaces. The Contractor shall employ experienced workers or professional cleaners for final cleaning. The Contractor shall clean each surface or unit of Work to the condition expected from a normal, commercial building cleaning and maintenance program.

- B. The Contractor shall comply with the manufacturer's instructions for cleaning operations. Clean surfaces using solvent-free, low-VOC, and low odor cleaners meeting Green Seal Standard GS-37.
- C. The Contractor shall complete the following cleaning operations before requesting the final inspection.
 - 1. Remove labels which are not required as permanent labels.
 - 2. Clean transparent materials, including mirrors and glass in doors and windows, to a polished condition. Remove putty and other substances which are noticeable as vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
 - 3. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of dust, stains, films and similar noticeable distracting substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors shop vacuumed (filtered) clean.
 - 4. Vacuum carpeted and soft surfaces with high efficiency particulate arrestor (HEPA) filtered vacuum cleaner.
 - 5. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - 6. Thoroughly wipe surfaces of mechanical and electrical equipment clean. Remove excess lubrication and other substances such as oil and/or grease films. Clean plumbing fixtures exterior surfaces and interior traps to a sanitary condition. Clean light fixtures and lamps.
 - 7. Clean the Project site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas to a broom clean condition; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

3.3 REMOVAL OF TEMPORARY FACILITIES

- A. At the completion of the Work, the Contractor shall remove from the premises all tools, appliances, materials, debris, scaffolding, temporary structures, temporary construction for which the Contractor has been responsible.
- B. At the completion of the Work, the Contractor shall cap all temporary utility lines.

3.4 REPAIR OF THE WORK

- A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.
- B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.
 - 1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
 - 2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that already show evidence of repair or restoration.
 - a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.
4. Replace burned-out bulbs, bulbs noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.

DRAFT



KEY LIABILITY FORM

University of California, Santa Cruz

Office of Physical Planning Development and Operations

Key Code	# of Keys Issued	Date Received	Borrower's Initials	Date Returned	PM's Initials

I, the undersigned, acknowledge receipt of the keys designated above. I also agree not to loan, transfer, give possession for misuse, modify or alter the above keys. I further agree not to cause, allow or contribute to the making of any unauthorized copies of the above keys. I also understand that it is my responsibility to return all keys issued to me to UCSC Project Manager at the completion of the Project.

I understand and agree that violation of this agreement or loss of the keys designated above due to my negligence will result in disciplinary action and may render me responsible for the expenses of a rekey for the affected areas. Final payment will not be issued until all keys are returned, in conformance with Division 1 Section 01 77 00 - Closeout Procedures.

Company Name: _____

Name: _____

Signature: _____

Date: _____

END OF SECTION 01 77 00

DRAFT

SECTION 01 78 30

GUARANTEES, BONDS, SERVICE AND MAINTENANCE CONTRACTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Guarantees from Subcontractors shall not limit Contractor's warranties and guarantees to The University. Whenever possible, Contractor shall cause warranties of Subcontractors to be made directly to The University. If such warranties are made to Contractor, Contractor shall assign such warranties to The University prior to final payment.

1.2 WARRANTIES

- A. Warranty of Title:

No material, supplies, or equipment for the Work under this Contract shall be purchased subject to any chattel mortgage, security agreement, or under a conditional sale or other agreement by which an interest therein or any part thereof is retained by the seller or supplier. Contractor warrants good title to all material, supplies and equipment installed or incorporated in the Work and agrees upon completion of all Work to deliver to the premises together with all improvements and appurtenances constructed or placed thereon by him to The University free from any claim, liens, security, and/or interest. No corporation shall have any right to a lien upon the premises or any improvement or appurtenances thereon, provided that this shall not preclude Contractor from installing metering devices and other equipment of utility companies of municipalities, the title of which is commonly retained by the utility company or the municipality. In the event of the installation of any such metering device or equipment, Contractor shall advise The University as to the legal owner thereof. Nothing contained in this paragraph, however, shall defeat or impair the right of such persons furnishing materials or labor under any law permitting such persons to look to funds due to Contractor in the hands of The University. The provisions of this Paragraph shall be inserted in all subcontracts to all persons furnishing materials for the Work when no formal contract is entered into for such materials.

1.3 GUARANTEES

- A. Responsibility: The General Conditions of the Contract covers Contractor's responsibility to remedy defects due to faulty workmanship and materials which shall appear within the initial (or any extended) warranty periods from the date of Project acceptance. This requirement is also included in the Performance Bond.

1.4 FORM OF GUARANTEE

- A. Submit written guarantees, in the form contained at the end of this Section.

1.5 SUBMITTAL REQUIREMENTS

- A. Assemble required guarantees, bonds, and service and maintenance contracts.

- B. Contractor shall provide one (1) digital copy in PDF searchable format (.pdf) with optical character recognition (OCR) capability organized by specification section.
- C. Table of Contents: Neatly typed and in orderly sequence. Provide complete information for each item as follows:
 - 1. Product or Work item.
 - 2. Firm name, address, and telephone number; and name of principal.
 - 3. Scope.
 - 4. Date of beginning of guarantee, bond, or service and maintenance contract.
 - 5. Duration of guarantee, bond, or service and maintenance contract.
 - 6. Contractor's name, address, and telephone number; and name of principal.
 - 7. Provide information for The University's personnel:
 - a. Proper procedure in case of failure.
 - b. Circumstances which might affect the validity of guarantee or bond.

1.6 FORM OF SUBMITTALS

- A. Format:
 - 1. Size 8-1/2" x 11" sheets punched for 3-ring binder. Fold larger sheets to fit into binders.
 - 2. Identify each packet on the cover with typed or printed title, "GUARANTEES AND BONDS," and the following:
 - a. Title of Project.
 - b. Name of Contractor.
- B. Binders: Commercial quality, 3-ring, with durable and cleanable plastic covers.

1.7 TIME OF SUBMITTALS

- A. Within ten (10) days after date of Substantial Completion, prior to request for final payment.
- B. For Work activities, where Final Completion is delayed materially beyond the date of Substantial Completion, provide updated submittal within ten (10) days after Final Completion, listing the date of Final Completion as the start of the Guarantee To Repair Period.

1.8 SUBMITTALS REQUIRED

- A. Submit guarantees, bonds, and service and maintenance contracts specified in the individual Sections.
- B. Form: Guarantees or warranties as specified for longer than the twelve months indicated herein shall be in the form of a guarantee written on the letterhead of Contractor, subcontractor or supplier doing the Work and/or supplying the item to be guaranteed.
- C. Any guarantee form that has not been copied identically from The University's form (sample at end of this Section) and is not on letterhead will not be accepted.
- D. Several Sections of the Specifications require special guarantees and/or extended warranties. Refer to each Section and the Submittal Schedule, Section 01 33 00 – Submittal Procedures.

PART 2 - PRODUCTS: NOT USED

PART 3 - EXECUTION

3.1 FORMS:

DRAFT

GUARANTEE

Project Name: _____ Date: _____

Project Location: _____

Project Number: _____

GUARANTEE FOR _____

(Specification Section and Contract No.)

(the "Contract"), between The University of the University of California ("The University") and
_____ (Contractor)

(Name of Contractor or Subcontractor)

hereby guarantees to The University that the portion of the Work described as follows:

which it has provided for the above-referenced project, is of good quality; free from defects; free from any liens, claims, and security interests; and has been completed in accordance with

Specification Section _____
and the other requirements of the Contract.

The undersigned further agrees that, if at any time within _____ months after the date of the guarantee the undersigned receives notice from The University that the aforesaid portion of the Work is unsatisfactory, faulty, deficient, incomplete, or not in conformance with the requirements of the Contract, the undersigned will, within ten (10) calendar days after receipt of such notice, correct, repair, or replace such portion of the Work, together with any other parts of the Work and any other property which is damaged or destroyed as a result of such defective portion of the Work or the correction, repair, or replacement thereof; and that it shall diligently and continuously prosecute such correction, repair, or replacement to completion.

In the event the undersigned fails to commence such correction, repair, or replacement within ten (10) calendar days after such notice, or to diligently and continuously prosecute the same to completion, the undersigned, collectively and separately, do hereby authorize The University to undertake such correction, repair, or replacement at the expense of the undersigned; and Contractor will pay to The University promptly upon demand all costs and expenses incurred by The University in connection therewith.

SUBCONTRACTOR

Signed: _____ Title: _____

Typed Name: _____

Name of Firm: _____

Contractor License Classification: _____

License Number: _____

Address: _____

Telephone Number: _____

CONTRACTOR

Signed: _____ Title: _____

Typed Name: _____

Name of Firm: _____

Date: _____

END OF SECTION 01 78 30

SECTION 01 81 12

SUSTAINABLE DESIGN REQUIREMENTS – CALGREEN

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general requirements and procedures for compliance with CALGreen mandatory measures.

EDIT THE FOLLOWING PARAGRAPH TO PROJECT TYPE.

- B. CALGreen Compliance general statement: **[COORDINATE SCOPE TO PROJECT]**: This project will comply with Residential Mandatory Measures and or Nonresidential Mandatory Measures.

1.2 ADMINISTRATIVE REQUIREMENTS

- A. Respond to questions and requests from Authorities having Jurisdiction on Sustainable Building requirements and CALGreen documentation.

1.3 INFORMATIONAL SUBMITTALS

EDIT THE FOLLOWING LIST TO ITEMS THAT ARE INCLUDED IN THE PROJECT.

- A. CALGreen Documentation Submittals. Residential **[COORDINATE TO PROJECT SPECIFIC NEEDS]**
1. 4.303.2: Twenty Percent Savings on Indoor water use: submit data on plumbing fixture water use data.
 2. 4.408: Construction Waste Reduction, Disposal and Recycling: Waste Management Plan and Construction Waste Documentation in accordance with 01 74 19 – Construction Waste Management and Disposal.
 3. 4.410: Operation and Maintenance Manual in accordance with 01 77 00 – Closeout Procedures
 4. 4.504.5: Composite Wood products: submit data formaldehyde content and emissions.
 5. 4.505.3: Moisture Content of Building Materials Measure and record moisture meeting data from wood framing prior to installation of finishes.
 6. 4.504.2.1: Pollutant control; Adhesives, sealants and caulks: Submit data on VOC content.
 7. 4.504.2.2: Paints and Coatings: Submit data on VOC content.
 8. 4.504.3: Carpet Systems: Submit Green Label Plus certification.
 9. 4.504.4: Resilient flooring Systems: Submit VOC emission data
 10. 4.506.1: Bathroom Exhaust Fans: Bath Exhaust Fans energy star rating.
- B. CALGreen Documentation Submittals: Nonresidential **[COORDINATE TO PROJECT SPECIFIC NEEDS]**
1. 5.106.1: Stormwater Pollution Prevention Plan in accordance with 01 57 13 – Temporary Erosion and Sediment Control or 01 57 23 – Temporary Storm Water Pollution Control.
 2. 5303.6: Plumbing Fixtures and Fittings: submit data indicating compliance with 20 percent reduced flow rate from baseline.

3. 5304.3.1: Irrigation Controller: submit data on weather or soil moisture-based controller.
4. 5.408.2: Construction Waste Management Plan in accordance with 01 74 19 – Construction Waste Management and Disposal
5. 5.410.2: Commissioning: in accordance with 01 91 00 - Commissioning < APPLIES TO BUILDINGS GREATER THAN 10,000 SF>
6. 5.504.4.1: Adhesives, sealants and caulks submit data on VOC contents
7. 5.504.4.3: Paints and coatings submit data on VOC content.
8. 5.504.4.4: Carpet submit data on compliance with either CRI Green Label Plus, California Department of Public Health Standard Practice for the testing of VOC's, NSF/ANSI 140 at the Gold Level, or Scientific Certifications Systems Sustainable Choice.
9. 5.505.4.4.1: Carpet Cushion submit data indicating compliance with CRI Green Label Plus.
10. 5.504.4.2: Carpet Adhesive submit data on emissions compliance.
11. 5.504.4.5: Composite wood products: submit data indicating compliance with California Air Resources Board, (CARB) Formaldehyde Limits.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Provide products and procedures necessary to meet CALGreen Standards.

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor is responsible for proper field execution of all Work, including compliance with CALGreen prerequisites and credit requirements at the jobsite. Communicate applicable CALGreen requirements to all subcontractors and trades involved.
 1. Notify University's Representative immediately of failure to meet any stated CALGreen prerequisite or credit requirement.
- B. Collect all CALGreen documentation specified and store on site available to Authorities having Jurisdiction and the University Representative.

3.2 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

- A. Refer to section 01 74 19 – Construction Waste Management and Disposal.
- B. The University's Construction Waste Disposal Diversion Requirement exceeds the CALGreen requirement of 50%. Compliance with the University's standard will exceed CALGreen.

3.3 BUILDING OPERATION AND MAINTENANCE MANUAL

- A. Refer to section 01 77 00 - Closeout Procedures

END OF SECTION 01 81 12

SECTION 01 81 13

LEED REQUIREMENTS

REVISE THIS SECTION BY DELETING AND INSERTING TEXT TO MEET PROJECT-SPECIFIC REQUIREMENTS. IF A LEED CONSULTANT IS PART OF THIS PROJECT, YOU MAY WISH TO HAVE THE LEED CONSULTANT EDIT THIS SECTION.

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Requirements and procedures for compliance with U.S. Green Building Council's (USGBC) LEED prerequisites and credits needed for the Project to obtain LEED certification under the current LEED rating system, at a minimum LEED Silver level.

EDIT THE FOLLOWING PARAGRAPH TO DESCRIBE THE PROJECT. YOU MAY WISH TO HAVE THE DESIGN PROFESSIONAL WRITE THIS DESCRIPTION.

1. **[LEED PROJECT DESCRIPTION]** (EXAMPLE: *The Project will be split into two LEED certified projects: Residential Dormitory Buildings A and B; and the Plaza Building. The Master Site credits apply to the overall Project. Renovation of the Gate House Building is excluded from LEED certification.*)
2. Some LEED prerequisites and credits needed to obtain LEED certification are dependent on material selections and may not be specifically identified as LEED requirements. Compliance with requirements needed to obtain LEED prerequisites and credits may be used as one criterion to evaluate substitution requests.
3. Additional LEED prerequisites and credits needed to obtain the indicated LEED certification are dependent on the Architect's design and other aspects of the Project that are not part of the Work of the Contract.

- B. Related Sections:

EDIT THE FOLLOWING LIST APPROPRIATE TO THE PROJECT.

1. Section 01 25 00 - Substitution Procedures
2. Section 01 31 19 - Project Meetings
3. Section 01 57 23 – Temporary Storm Water Pollution Control
4. Section 01 74 19 - Construction Waste Management and Disposal
5. Section 01 81 19 - Indoor Air Quality Requirements
6. Section 01 91 00 - Commissioning
7. Refer to Divisions 2 through 48 for LEED requirements specific to the Work of each of those Sections. These requirements may or may not include references to LEED.
8. Verify and confirm the appropriate LEED Rating System for the Project and assist in the development of the Project Checklist.

1.2 DEFINITIONS

- A. Absorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fibrous insulation, fabrics, and other similar products.

- B. Certificates of Chain-of-Custody: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria". Certificates shall include evidence that mill is certified for chain-of-custody by an FSC-accredited certification body.
- C. Chain of Custody: A tracking procedure to document the status of a product from the point of harvest, extraction, or recovery to the point of ultimate end use.
- D. Composite Wood & Agrifiber Products: Particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates, and door cores.
- E. LEED: Leadership in Energy & Environmental Design.
- F. Rapidly Renewable Materials: Materials made from agricultural products that are typically harvested within a ten-year or shorter cycle. Rapidly renewable materials include products made from cork, bamboo, natural rubber, wheat, cotton, flax, jute, straw, sunflower seed hulls, linseed (linoleum), or wool.
- G. Recycled Content: The proportion, by mass, of pre-consumer or post-consumer recycled material in a product, as defined by the International Organization of Standards, Document ISO 14021 "Environmental Labels and Declarations Self-Declared Environmental Claims (Type II Environmental Labeling)".
 - 1. Assembly recycled content is the percentage of material in a product that is either post-consumer or pre-consumer recycled content. It is determined by dividing the weight of the recycled content by the overall weight of the assembly.
 - 2. Post-consumer recycled content is the percentage of material in a product that was consumer waste. The recycled material was generated by household, commercial, industrial, or institutional end-users, and can no longer be used for its intended purpose. It includes returns of materials from the distribution chain (ISO 14021).
 - 3. Pre-consumer recycled content, formerly known as post-industrial content, is the percentage of material in a product that is recycled from manufacturing waste. as material diverted from the waste stream during the manufacturing process. Excluded are rework, regrind or scrap materials capable of being reclaimed within the same process that generated them (ISO 14021).
- H. Regional Materials: Materials or products that have been extracted, harvested, or recovered, as well as manufactured, within 500 miles of the project site. If only a fraction of a product or material is extracted, harvested, or recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value. Do not include mechanical, electrical, and plumbing components, and specialty items such as elevators and equipment. Include only materials permanently installed in the Project.
 - 1. Manufacturing refers to the final assembly of components into the building product that is furnished and installed by the trade workers.
 - 2. Regionally extracted materials are raw materials taken from within a 500-mile radius of the project site.
 - 3. Regionally manufactured materials are assembled as finished products within a 500-mile radius of the project site. Assembly does not include on-site assembly, erection, or installation of finished components.

1.3 SUBMITTALS

- A. General: LEED submittals shall be included with other submittals; mark pertinent submittals with the notation "LEED". Submit LEED documentation submittals at the same time as product

submittals. Refer to individual specification's sections for additional LEED submittal requirements that are specific to that section or product.

- B. Refer to Section 01 25 00 – Substitution Procedures for environmental criteria for evaluation of substitute products. Substitutions that may affect LEED certification shall be clearly stated as such.
- C. Project Materials Cost Data: Provide a spread sheet indicating total cost for building materials used for Project. Spread sheet will serve as the basis for calculating the costs and percentages of building materials which qualify under various LEED credits.
 - 1. Breakdown the total construction cost by listing each technical specifications section (CSI MasterFormat 2004/2010 Edition, Divisions 3 through 10 only) as a line item. Do not include Division 01 administrative costs or mechanical, electrical, or plumbing items, or equipment.
 - 2. Separate each material line item into Total Construction Cost and Material Cost.
 - 3. Allow additional columns for listing each LEED point which requires a material cost breakdown for LEED documentation.
 - 4. Submit preliminary copy of cost data for review by University's Representative. After review, make corrections as indicated.
- D. LEED Action Plans: Provide initial submittals within same number of days as required for other initial submittals, indicating how the following requirements will be met.

EDIT THE FOLLOWING LIST TO BE APPROPRIATE TO THE TARGET POINTS OF THE PROJECT.

- 1. SS Prerequisite 1: Erosion and sedimentation control plan complying with Section 01 57 23 – Temporary Storm Water Pollution Control
 - 2. MR Credit 2: Waste management plan complying with Section 01 74 19 – Construction Waste Management and Disposal
 - 3. MR Credit 4: List of proposed materials with recycled content.
 - a. Indicate cost, post-consumer recycled content, and pre-consumer recycled content for each product having recycled content.
 - 4. MR Credit 5: List of proposed regional materials. Identify each regional material, including its source, cost, and the percentage by weight that is considered regional.
 - 5. MR Credit 7: List of proposed certified wood products.
 - a. Indicate each product containing certified wood, its source, and cost.
 - b. Include statement indicating total cost for wood-based materials used for Project, including non-rented temporary construction.
 - 6. IEQ Credit 3.1: Develop and implement a construction indoor air quality management plan during construction. Comply with Section 01 81 19 - Indoor Air Quality Requirements.
 - 7. IEQ Credit 3.2: Develop and implement a construction indoor air quality management plan before occupancy. Comply with Section 01 81 19 - Indoor Air Quality Requirements.
- E. LEED Progress Reports: Concurrent with each Application for Payment, submit reports comparing actual construction and purchasing activities with LEED action plans for the following:

EDIT THE FOLLOWING LIST TO BE APPROPRIATE TO THE PROJECT.

- 1. MR Credit 2: Waste reduction progress reports
- 2. MR Credit 4: Recycled Content Materials
- 3. MR Credit 5: Regional Materials
- 4. MR Credit 7: Certified Wood

- F. LEED Documentation Submittals: Concurrent with each product submittal, submit the following LEED Submittals showing compliance with the required LEED Credits.

EDIT THE FOLLOWING LIST TO REFLECT TARGETED POINTS IN THE PROJECT:

1. SS Credit 7.1 - Heat Island Effect - Nonroof: Submit product data for each paving material installed on site indicating its Solar Reflectance Index (SRI).
2. SS Credit 7.2 - Heat Island Effect - Roof: Submit product data for roofing materials indicating Solar Reflectance Index (SRI) compliance.
3. SS Credit 8 - Light Pollution Reduction: Submit product data for interior and exterior lighting fixtures that stop direct-beam illumination from leaving the building site.
4. WE Prerequisite - Water Use Reduction and Credit [2.1 and 2.2] [3.1] [and] [3.2] - Submit product data for plumbing fixtures indicating water consumption.
5. EA Prerequisite 3 - Fundamental Refrigerant Management: Submit product data for new HVAC equipment indicating absence of CFC refrigerants.
6. EA Credit 4 - Enhanced Refrigerant Management: Submit product data for new HVAC equipment indicating absence of HCFC refrigerants.
7. EA Credit 5 - Measurement and Verification: Submit product data and wiring diagrams for sensors and data collection system used to provide continuous metering of building energy and water consumption performance over time.
8. MR Credit 2 - Construction Waste Management: Comply with Section 01 74 19 – Construction Waste Management and Disposal.
9. MR Credit 4 - Recycled Content: Submit product data and certification letter indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Include statement indicating costs for each product having recycled content.
10. MR Credit 5 - Regional Materials: Submit product data for regional materials indicating location and distance from Project of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
11. MR Credit 7 - Certified Wood: Submit product data and certificates of chain-of-custody for products containing certified wood.
 - a. ***INCLUDE STATEMENT INDICATING COSTS FOR EACH PRODUCT CONTAINING CERTIFIED WOOD AND STATEMENT INDICATING TOTAL COST FOR WOOD-BASED MATERIALS PERMANENTLY INSTALLED ON THE PROJECT.***
12. IEQ Credit 1 - Outdoor Air Delivery Monitoring: Submit product data and shop drawings for carbon dioxide monitoring system.
13. IEQ Credit 3.1 - Construction IAQ Management During Construction: Comply with Section 01 81 19 – Indoor Air Quality Requirements.
 - a. Construction indoor air quality management plan.
 - b. Product Data for temporary filtration media.
 - c. Construction Documentation: Six photographs at three different occasions during construction along with a brief description of the SMACNA approach employed, documenting implementation of the IAQ management measures, such as protection of ducts and on-site stored or installed absorptive materials.
14. IEQ Credit 3.2 - Construction IAQ Management Plan Before Occupancy:
 - a. Submit a signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced after flush-out,

b. AND Product Data for filtration media used during flush-out.

15. IEQ Credit 4.1 - Low-Emitting Materials - Adhesives and Sealants: Submit product data for adhesives and sealants used on the interior of the building indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59.
16. IEQ Credit 4.2 - Low-Emitting Materials - Paints and Coatings: Submit product data for paints and coatings used on the interior of the building indicating chemical composition and VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.
17. IEQ Credit 4.3 - Low-Emitting Materials - Flooring Systems: Submit product data for flooring products indicating compliance with referenced standards and VOC content of each adhesive, sealant, and grout product used.
18. IEQ Credit 4.4 - Low-Emitting Materials - Composite Wood and Agrifiber Products: Submit product data for composite wood and agrifiber products indicating that products contain no added urea-formaldehyde resins.

a. INCLUDE STATEMENT INDICATING ADHESIVES AND BINDERS USED FOR EACH PRODUCT.

19. IEQ Credit 5 - Indoor Chemical and Pollutant Source Control: Submit product data and shop drawings for entrance mats indicating size, location, installation method, and cleaning capabilities. Submit product data for air filters indicating that filters have a minimum efficiency reporting value (MERV) of 13 or higher.
20. IEQ Credit 6.1 - Controllability of Systems - Lighting: Submit product data and shop drawings for sensors and lighting controls used to provide individual lighting control for minimum 90 percent of regularly occupied space.
21. IEQ Credit 6.2 - Controllability of Systems - Thermal Comfort: Submit product data and shop drawings for sensors and control system used to provide individual airflow and temperature controls for minimum 50 percent of non-perimeter, regularly occupied space.
22. IEQ Credit 7.2 - Thermal Comfort - Verification: Submit product data and shop drawings for sensors and control system used to monitor and control room temperature and humidity.
23. IEQ Credit 8.1 - Daylight and Views - Daylight: Submit product data on glazing products for windows, skylights, and doors.

G. LEED Closeout Submittals:

1. MR Credit 2 - Construction Waste Management: Submit final waste reduction report complying with Section 01 74 19 - Construction Waste Management and Disposal.
2. Submit final cost data and spreadsheet, updated to include change orders and revisions during construction, for the following:

COORDINATE THE FOLLOWING LIST TO ACTUAL CREDITS TARGETED BY THE PROJECT:

- a. MR Credit 3 - Reused Materials
 - b. MR Credit 4 - Recycled Content Materials
 - c. MR Credit 5 - Regional Materials
 - d. MR Credit 7 - Certified Wood
3. IEQ Credit 3.1 and 3.2 - Construction Indoor Air Quality Management: Submit documentation of indoor air quality procedures taken during construction and final report describing either building flush-out procedures or IAQ testing procedures, complying with Section 01 81 19 - Indoor Air Quality Requirements.

1.4 QUALITY ASSURANCE

- A. Contractor and Subcontractor Qualifications: Contractors and subcontractors who are familiar, or who are willing to become familiar with LEED Green Building Rating System credit and documentation requirements and processes, and who will provide the required documentation for LEED credits.
 - 1. Review and be familiar with the LEED Reference Guide for Green Building Design and Construction, 2009 Edition, for New Construction, which includes guidelines and tools for documenting LEED credits.
 - 2. Obtain and bring to the Pre-construction meeting the Contractor's copy of the above Reference Guide.
 - 3. Keep a copy of the current LEED Reference Guide on the jobsite at all times.
 - 4. To obtain information on LEED, contact the U.S. Green Building Council at Tel. 202-828-7422 or www.usgbc.com.
- B. Contractor's LEED Representative: Contractor shall designate a LEED Representative, for approval by the University's Representative. LEED Representative shall be an individual responsible for implementation, coordination, and documentation of LEED Credit Requirements. LEED Representative shall attend all LEED Certification meetings and shall be present on site at all times when work is in progress.
- C. Meetings: Conduct LEED coordination meetings throughout the construction process in order to educate personnel and assure compliance with LEED requirements by all Contractor and subcontractor personnel working on the site.
 - 1. LEED Certification meetings may be combined with other Project meetings.
 - 2. Meeting attendees shall include:
 - a. Contractor's Project Manager.
 - b. Contractor's LEED Representative.
 - c. Subcontractor representatives as appropriate to stage of work.
 - 3. At a minimum, discuss LEED certification goals and issues at the Preconstruction Conference, Progress Meetings, and subcontractor meetings.

PART 2 - PRODUCTS

2.1 RECYCLED CONTENT OF MATERIALS

RETAIN THE FOLLOWING FOR PROJECTS PURSUING CREDIT MR4.

- A. MR Credit 4 - Recycled Materials: Provide building materials with recycled content such that the post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 20 percent of the cost of materials used for the Project.
 - 1. The cost of post-consumer recycled content of an item shall be determined by dividing the weight of post-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.
 - 2. The cost of post-consumer recycled content plus one-half of pre-consumer recycled content of an item shall be determined by dividing the weight of post-consumer recycled content plus one-half of pre-consumer recycled content in the item by the total weight of the item and multiplying by the cost of the item.
 - 3. Do not include mechanical and electrical components in the calculation.

4. Recycled content of materials shall be defined in accordance with the International Organization of Standards document ISO 14021 - "Environmental Labels and Declarations -- Self-Declared Environmental Claims (Type II Environmental Labeling).

2.2 REGIONAL MATERIALS

RETAIN THE FOLLOWING PARAGRAPH FOR PROJECT PURSUING CREDIT MR5.

- A. MR Credit 5 - Regional Materials: Provide 20 percent of building materials (by cost) that are regionally extracted, harvested, or recovered as well as manufactured within 500 miles of the Project site.
 1. For assistance in locating regional manufacturers and materials, refer to: San Francisco Chapter, Construction Specifications Institute "San Francisco Bay Area Regional Materials Database for Green Buildings", available at: www.csisf.net.

2.3 CERTIFIED WOOD

RETAIN THE FOLLOWING PARAGRAPH FOR PROJECT PURSUING CREDIT MR7.

- A. MR Credit 7 - Certified Wood: Provide a minimum of 65 percent (by cost) of wood-based materials that are produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."
 1. Wood-based materials include, but are not limited to, the following materials when made from solid wood, engineered wood products, or wood-based panel products. Only include materials permanently installed in the Project.
 - a. Rough Carpentry
 - b. Finish Carpentry
 - c. Architectural Woodwork
 - d. Wood Doors

2.4 LOW-EMITTING MATERIALS

EDIT THIS LIST TO BE APPROPRIATE TO THE PROJECT.

NOTE: IN THE EVENT THAT LEED CREDITS IEQ ARE NOT BEING PURSUED, RETAIN SECTION 01 81 12 – SUSTAINABLE DESIGN REQUIREMENTS: CALGREEN FOR CALGREEN COMPLIANCE.

- A. IEQ Credit 4.1 - Low-Emitting Materials - Adhesives and Sealants: For interior applications (inside of the weatherproofing system and applied on-site) use adhesives, sealants, and sealant primers that comply with South Coast Air Quality Management District (SCAQMD) Rule #1168, effective July 1, 2005 and rule amendment date of January 7, 2005.
 1. Architectural Applications:
 - a. Indoor Carpet Adhesives: 50 g/L
 - b. Carpet Pad Adhesives: 50 g/L
 - c. VCT and Asphalt Adhesives: 50 g/L
 - d. Cove Base Adhesives: 50 g/L

- e. Gypsum Board and Panel Adhesives: 50 g/L
 - f. Subfloor Adhesives: 50 g/L
 - g. Rubber Floor Adhesives: 60 g/L
 - h. Ceramic Tile Adhesives: 65 g/L
 - i. Multipurpose Construction Adhesives: 70 g/L
 - j. Wood Flooring Adhesives: 100 g/L
 - k. Structural Glazing Adhesives: 100 g/L
2. Specialty Applications:
- a. Contact Adhesives: 80 g/L.
 - b. Structural Wood Member Adhesives: 140 g/L
 - c. Plastic Cement Welding Compounds: 250 g/L
 - d. Special Purpose Contact Adhesive: 250 g/L
 - e. Top and Trim Adhesive: 250 g/L
 - f. ABS Welding Compounds: 325 g/L
 - g. CPVC Welding Compounds: 490 g/L
 - h. PVC Welding Compounds: 510 g/L
 - i. Adhesive Primer for Plastic: 550 g/L
3. Substrate Specific Applications:
- a. Metal to Metal Adhesives: 30 g/L
 - b. Wood Glues: 30 g/L
 - c. Adhesives for Porous Materials (Except Wood): 50 g/L
 - d. Plastic Foam Adhesives: 50 g/L
 - e. Fiberglass Adhesives: 80 g/L
4. Sealants:
- a. Architectural Sealants: 250 g/L
 - b. Nonmembrane Roof: 300 g/L
 - c. Single-ply Roof Membrane: 450 g/L
 - d. Other: 420 g/L
5. Sealant Primers:
- a. Architectural, Nonporous Substrates: 250 g/L
 - b. Architectural, Porous Substrates: 775 g/L
 - c. Other: 750 g/L
6. Aerosol Adhesives: Comply with Green Seal Standard for Commercial Adhesives GS-36, dated October 19, 2000. Meet the following VOC limit in grams per liter less water, when calculated according to 40 CFR 59:
- a. Aerosol General Purpose Web Spray: 55% VOCs by weight
 - b. Aerosol General Purpose Mist Spray: 65% VOCs by weight
 - c. Special Purpose Aerosol Adhesives: 70% VOCs by weight
- B. IEQ Credit 4.2 - Low-Emitting Materials - Paints and Coatings: For interior applications (inside of the weatherproofing system and applied on-site) use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D, and the following chemical restrictions:

1. Architectural paints, coatings, and primers applied to interior walls and ceilings: Do not exceed the VOC limits established in Green Seal Standard GS-11, Paints, First Edition, May 20, 1993.
 - a. Flat Paints and Coatings: 50 g/L
 - b. Non-Flat Paints and Coatings: 150 g/L
 - c. Primers and Undercoats: 200 g/L
 2. Anti-corrosive and anti-rust paints applied to interior ferrous metal substrates: VOC not more than 250 g/L, established in Green Seal Standard GC-03, Anti-Corrosive Paints, Second Edition, January 7, 1997.
 3. Clear wood finishes, floor coatings, stains, primers, and shellacs applied to interior elements: Do not exceed the VOC limits established in South Coast Air Quality Management District (SCAQMD) Rule 1113, Architectural Coatings, January 1, 2004.
 - a. Floor Coatings: 100 g/L
 - b. General Purpose Sealers: 200 g/L
 - c. Stains: 250 g/L
 - d. Waterproofing Sealers: 250 g/L
 - e. Sanding Sealers: 275 g/L
 - f. Clear Wood Varnishes: 350 g/L
 - g. Lacquers: 550 g/L
 4. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 5. Restricted Components: Paints and coatings shall not contain any of the following:
 - a. Acrolein
 - b. Acrylonitrile
 - c. Antimony
 - d. Benzene
 - e. Butyl benzyl phthalate
 - f. Cadmium
 - g. Di (2-ethylhexyl) phthalate
 - h. Di-n-butyl phthalate
 - i. Di-n-octyl phthalate
 - j. 1,2-dichlorobenzene
 - k. Diethyl phthalate
 - l. Dimethyl phthalate
 - m. Ethylbenzene
 - n. Formaldehyde
 - o. Hexavalent chromium
 - p. Isophorone
 - q. Lead
 - r. Mercury
 - s. Methyl ethyl ketone
 - t. Methyl isobutyl ketone
 - u. Methylene chloride
 - v. Naphthalene
 - w. Toluene (methylbenzene)
 - x. 1,1,1-trichloroethane
 - y. Vinyl chloride
- C. IEQ Credit 4.3 - Low-Emitting Materials - Flooring Systems: Provide flooring systems installed in the building interior which meet the following:

1. Carpet: Meet the testing and product requirements of the Carpet and Rug Institute (CRI) Green Label Plus program.
 2. Carpet Cushion: Meet the testing and product requirements of the Carpet and Rug Institute (CRI) Green Label program.
 3. Carpet Adhesive: Meet the requirements of IEQ Credit 4.1 - Adhesives and Sealants: VOC limit of 50 g/L.
 4. Hard Surface Flooring: Certified as compliant with FloorScore Standard (2009 or more stringent version). Products include vinyl, linoleum, rubber flooring, wall base, laminate flooring, wood flooring, and ceramic flooring.
 5. Floor Finishes (Sealers, Stains, and Finishes): Meet the requirements of South Coast Air Quality Management District (SCAQMD) Rule 1113, "Architectural Coatings", effective January 1, 2004. Flooring substrates include concrete, wood, bamboo, vinyl, linoleum, and cork.
 6. Tile Setting Adhesive and Grout: Meet South Coast Air Quality Management District (SCAQMD) Rule 1168; VOC limits effective July 1, 2005 and rule amendment date of January 7, 2005.
- D. IEQ Credit 4.4 - Low-Emitting Materials - Composite Wood and Agrifiber Products: Do not use any composite wood and agrifiber product on the interior of the building (inside the weatherproofing system) that contains added urea-formaldehyde resins.
1. Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies shall contain no added urea-formaldehyde resins.
 2. Composite wood and agrifiber products include particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates, and door cores.

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor is responsible for proper field execution of all Work, including compliance with LEED prerequisites and credit requirements at the jobsite. Communicate applicable LEED requirements to all subcontractors and trades involved.
1. Notify University's Representative immediately of failure to meet any stated LEED prerequisite or credit requirement.
- B. Collect all LEED documentation specified and submit to the University's Representative. In addition, upon completion of the Project, the Contractor is responsible for filling out specific LEED templates as specified herein, along with uploading copies of the supporting documentation to the Project's LEED Online documentation website. Provide all documentation and submittals in a timely manner prior to Final Completion.

3.2 SITE DISTURBANCE

RETAIN THE FOLLOWING PARAGRAPH FOR PROJECTS PURSUING CREDIT SS5.1.

- A. SS Credit 5.1 - Site Development - Protect or Restore Habitat: Limit site disturbance to the areas indicated on Drawings.

3.3 REFRIGERANT REMOVAL

EDIT THE FOLLOWING LIST TO REFLECT THE TARGET POINTS OF THE PROJECT.

- A. EA Prerequisite 3 - Fundamental Refrigerant Management: Remove CFC-based refrigerants from existing HVAC and refrigeration equipment indicated to remain and replace with refrigerants that are not CFC based. Replace or adjust existing equipment to accommodate new refrigerant as described in Division 23 Sections.
- B. EA Credit 4 - Enhanced Refrigerant Management: Remove HCFC-based refrigerants from existing HVAC and refrigeration equipment indicated to remain and replace with refrigerants that are not HCFC based. Replace or adjust equipment to accommodate new refrigerant.
 - 1. Refer to Division 23 Sections for additional requirements.

3.4 CONSTRUCTION WASTE MANAGEMENT

NOTE TO THE EDITOR: THE UNIVERSITY'S REQUIREMENTS FOR CONSTRUCTION WASTE MANAGEMENT ARE ALIGNED WITH LEED CREDIT MR 2.2 AND EXCEED THE REQUIREMENTS OF LEED CREDIT MR 2.1

- A. MR Credit 2 - Construction Waste Management: Comply with Section 01 74 19 - Construction Waste Management and Disposal.

3.5 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT

EDIT THE FOLLOWING LIST TO REFLECT THE TARGET POINTS OF THE PROJECT.

- A. IEQ Credit 3.1 - Construction IAQ Management Plan During Construction: Comply with Section 01 81 19 - Indoor Air Quality Requirements.
- B. IEQ Credit 3.2 - Construction IAQ Management Plan Before Occupancy: Comply with Section 01 81 19 - Indoor Air Quality Requirements. Provide one of the following:
 - 1. Flush-Out, Path 1: After construction ends, prior to occupancy and with all interior finishes installed, install new filtration media and perform a building air flush-out by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60 percent. Replace air filters after building air flush-out.
 - 2. Flush-Out, Path 2: If occupancy is desired prior to completion of the flush-out, the space may be occupied following delivery of a minimum of 3,500 cubic feet of outdoor air per square foot of floor area. Once the space is occupied, it shall be ventilated at a minimum rate of 0.30 cubic feet per minute (cfm) per square foot of outside air or the design minimum outside air rate determined in IEQ Prerequisite 1 - Minimum Indoor Air Quality Performance, whichever is greater. During each day of the flush-out period, ventilation shall begin a minimum of 3 hours prior to occupancy and continue during occupancy. These conditions shall be maintained until a total of 14,000 cubic feet per square foot of outside air has been delivered to the space.
 - 3. Air Testing: University will conduct baseline IAQ testing, after construction ends and prior to occupancy, using testing protocols consistent with the EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air, and as additionally detailed in the LEED Reference Guide for Green Building Design and Construction, 2009 Edition. Payment for these services will be made by University.

- C. IEQ Credit 5 - Indoor Chemical and Pollutant Source Control:
1. During construction do not allow any mixing of water and chemical concentrate to occur. Where water and/or chemical concentrate mixing occurs, comply with all applicable federal, state, and local laws and regulations for the storage, containment, and disposal of hazardous liquid wastes.
 2. Prior to occupancy, install new air filtration media in regularly occupied areas after all finishes have been installed and the building has been completely cleaned.
 - a. Provide filtration media with a minimum efficiency reporting value (MERV) of 13 or higher.
 - b. Apply filtration media to process both return air and outside air that is delivered as supply air.
- D. Refer to Section 01 81 19 - Indoor Air Quality Requirements for additional information.

END OF SECTION 01 81 13

SECTION 01 81 19

INDOOR AIR QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section describes construction Indoor Air Quality (IAQ) goals and includes administrative and procedural requirements for the development and execution of a construction air quality management plan to maintain high indoor air quality during the Work and following completion of it.

1.2 PERFORMANCE REQUIREMENTS

- A. Anticipate and prevent conditions that could compromise indoor air quality due to construction means, methods, process, and materials with particular attention to the following:

EDIT THE FOLLOWING TO COORDINATE TO PROJECT NEEDS:

- 1. Eliminating the use of materials containing Volatile Organic Compounds (VOC), formaldehyde and certain chemical compounds for which limitations are specified in CALGreen Requirements, LEED Requirements, Section 01 60 00 - Product Requirements and select construction materials and processes that will eliminate potential IAQ pollutants and contaminants from the Work.
 - 2. Protect the ventilation system components during construction and clean contaminated components after construction is complete.
- B. Conform to recommendations of Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd Edition, Chapter 3 Control Measures for the following.
 - 1. HVAC protection
 - 2. Source control
 - 3. Pathway interruption
 - 4. Housekeeping
 - 5. Scheduling

1.3 SUBMITTALS

- A. Prepare an IAQ Management Plan for the construction and commissioning phases of the project conforming to these specifications and the recommendations of Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, Chapter 3 Control Measures.
 - 1. Draft IAQ Management Plan Review Meeting: Once the University's Representative has reviewed the Draft IAQ Management Plan and prior to construction at the site, schedule and conduct a meeting to review the Draft IAQ Management Plan and discuss procedures, schedules and specific requirements for IAQ during the construction and pre-construction phases of the building. Discuss coordination and interface between the Contractor and other construction activities.

- a. Attendees: The Contractor and related Contractor personnel associated with the work of this Section, including personnel to be in charge of the IAQ management program, the University's Representative and such additional personnel as the University's Representative deems appropriate.
 2. Final IAQ Management Plan: Make any revisions to the Draft IAQ Management Plan agreed upon during the draft IAQ plan meeting and incorporate resolutions agreed to be made subsequent to the meeting. No work in the building interior may be initiated until this final plan has been submitted and approved.
- B. Construction Photographs: Digital, color images, 640 by 480 pixels on CD-ROM documenting construction IAQ management measures implemented during the Work such as duct protection measures and measures to protect on-site stored or installed absorptive materials from moisture. Provide annotation for images including, date, time and subject. Provide photographs of examples of each measure at three (3) different times during construction.
- C. Product Data: Filtration media used during construction and installed immediately prior to occupancy with Minimum Efficiency Reporting Value (MERV) values highlighted.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 APPLICATION

- A. For the construction and commissioning phases of the Project provide the following:
1. HVAC and Exhaust Systems Protection: Shut down the return side and/or outdoor air intake side of the HVAC systems, or the inlet side of the Exhaust systems whenever possible during heavy construction. If the system must remain operational during construction include the following strategies that apply:
 - a. Fit the return side and/or outdoor air intake side of the HVAC system, or the inlet side of an Exhaust system, with temporary filters.
 - b. Isolate the return side and/or outdoor intake side of the HVAC system, or the inlet side of an Exhaust system, from the surrounding environment as much as possible (e.g., place all tiles for the ceiling plenum, repair all ducts and air handler leaks).
 - c. Damper off the return, outdoor air intake, or exhaust system in the heaviest work areas and seal the supply, return, outdoor air, or exhaust system openings with plastic. This requirement shall also apply to all return air transfer ducts from one space to another.
 - d. Upgrade the filter efficiency where major loading is expected to affect operating HVAC or Exhaust system.
 - e. Clean permanent supply, return, outdoor, transfer, and inlet exhaust air ductwork per National Air Duct Cleaning Association standards upon completion of all construction and finish installation work.
 2. Source Control: Provide non-toxic formulations of materials and products and comply with chemical compound limitations throughout the work including but not limited to adhesives, coatings, substrate products, sealants, and cleaning products.
 3. Pathway Interruption: Prevent contamination of clean spaces. Include the following strategies that apply:

- a. Use 100 percent outside air ventilation (when outside temperatures are between 55 degrees F and 85 degrees F and humidity is between 30 percent and 60 percent) with air exhausted directly to the outside during installation of finishes and other VOC emitting materials. Contractor shall provide all necessary auxiliary HVAC and Exhaust equipment and ductwork to achieve this requirement and is expressly forbidden from using the building's existing or new HVAC and Exhaust systems and equipment for this purpose without prior written approval from the University Representative.
 - b. Erect air infiltration barriers between work areas or between the inside and outside of the building to prevent unwanted airflow from dirty to clean areas.
4. Housekeeping: Reduce construction contamination in the building prior to occupancy through Contractor provided auxiliary HVAC and Exhaust equipment and regular space cleaning activities.
- a. Store building materials in a weather tight, clean area prior to unpacking for installation.
 - b. Check for possible damage to building materials from high humidity.
 - c. Remove all temporary protective measures such as temporary filters and plastic covers from return side and outdoor air intakes of HVAC systems and inlets to Exhaust systems, clean all ducts, coils, air filters, and fans before testing and balancing procedures are performed.
5. Scheduling: Specify construction sequencing to reduce absorption of VOC's by materials that act as sinks or contaminant sources. Complete application of wet and odor-emitting materials such as paints, sealants, and coatings before installing sink materials such as ductwork insulation, ceiling tiles, carpets, insulation, gypsum products, and fabric-covered furnishings are installed.
6. Material Protection: Protect stored and installed absorptive materials from exposure to moisture through precipitation, plumbing leaks, or condensation from the HVAC system to prevent microbial contamination. Where practical provide conditioning period in controlled environment to reduce moisture content of materials where protection failed or was otherwise ineffective.

COORDINATE FOLLOWING PARAGRAPH FLUSH-OUT SCHEDULING WITH SECTION 01 81 13 – LEED REQUIREMENTS FOR ANY LEED AIR SAMPLING REQUIREMENTS.

7. Flush-out: Remove all sources of pollutants from building and conduct a minimum two-week building flush-out with new filtration media at 100 percent outside air following the end of construction activities and prior to Final Acceptance. No work shall occur during the flush-out period. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 8 as determined by ASHRAE Standard 52.2-1999. (Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.)
8. Final Filters: Replace filtration media used during flush-out prior to Testing, Adjusting, and Balancing, of HVAC and Exhaust systems, or occupancy.

3.2 IMPLEMENTATION

- A. Manager: The Contractor's Quality Assurance Manager shall be responsible for instructing workers and overseeing and implementing the IAQ Management Plan for the Project.
- B. Progress Meetings: Construction related IAQ procedures shall be included in the pre-construction and construction progress meeting agendas.

- C. Distribution: The Contractor shall distribute copies of the IAQ Management Plan to the Job Site Foreman, each Subcontractor and the University's Representative.
- D. Instruction: Provide on-site instruction regarding the IAQ procedures for all of the participants in the construction.
- E. Documentation: Document IAQ measures with photographs.

END OF SECTION 01 81 19

DRAFT

SECTION 01 91 00
COMMISSIONING

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. The Commissioning requirements designated in this Section pertain to building systems included in the Commissioning Program and as identified in this section. Commissioning activities included in the Commissioning Program are:
1. Systems and equipment testing and start-up
 2. Verification of proper and thorough installation of systems and equipment
 3. Systems balancing verification, to the limit testing and balancing is required
 4. Equipment performance verification, to the limit testing and balancing is required
 5. Functional testing of equipment operation and control systems
 6. Documentation of tests, procedures and installations
- B. Building commissioning of the following systems:

INPUT FROM THE DESIGN TEAM IS REQUIRED FOR THE FOLLOWING LIST:

1. HVAC components and equipment.
2. HVAC System: Integration of cooling, heating, exhausts, and comfort delivery systems.
3. Building Automation System (BAS): Control hardware and software, sequence of operations, graphics, setpoint adjustment, alarms posting, and integration of factory controls with BAS.
4. Electrical Power Systems
5. Electrical Lighting Control System and Interface with daylighting
6. Domestic and Industrial Hot Water Heating Systems
7. Steam Generation and Condensate Pumping Systems
8. Lab Equipment Cooling Systems
9. Elevator Systems
10. Fire Alarm and Life Safety Systems
11. Emergency and Standby Power Generation Systems
12. Plumbing Systems
13. Security Systems
14. Site Electrical Systems and Centralized Standby Power System

1.2 RELATED SECTIONS

- A. Drawings and general/technical provisions of specifications.
- B. Related Sections:

EDIT THE FOLLOWING LIST TO THE ITEMS THAT REQUIRE COMMISSIONING. YOU MAY WANT TO GET INPUT FROM THE DESIGN PROFESSIONALS.

1. Section 01 77 00 Closeout Procedures.

2. Refer to Divisions 2 through 48 for requirements specific to the Work in these Sections, including, but not limited to:
 - a. Controls
 - b. Tests and Balancing
 - c. Mechanical System Commissioning
 - d. Mechanical and Electrical Basic Construction Materials and Methods
 - e. Field Test and Operational Check
 - f. General Lighting Conditions
 - g. Lighting Control System
 - h. Fire Detection and Alarm System
 - i. Card Access, Door Alarm and Video surveillance Security System
 - j. Electrical System Commissioning

1.3 GENERAL DESCRIPTION

- A. Commissioning (Cx) is the process of the ensuring that building systems included in the Commissioning Program are installed and perform interactively according to the design intent, meet the University's operation needs, and that the installation and its operation is adequately documented. It serves as a tool to minimize post-occupancy operational problems. It establishes testing and communication protocols in an effort to advance the building systems from installation to full dynamic operation and optimization.
- B. The University's Commissioning Authority (CA) shall work with the Contractors and the Design Engineers to direct, oversee, and document the Cx process and witness functional performance testing. Additionally, the CA shall review Contractor start-up procedures and help develop installation checklists and the functional performance test procedures.
- C. This section defines responsibilities of the Contractor to facilitate the Commissioning process particularly during the Construction Phase.

1.4 DEFINITIONS AND ABBREVIATIONS

- A. Acceptance Phase: Phase of project that facility and its systems and equipment are inspected, tested, verified, etc. and when most functional performance testing and formal training occurs. This phase generally overlaps the construction phase and ends with Functional Completion.
- B. AMCA: Air Movement and Control Association
- C. ANSI: American National Standards Institute, Inc.
- D. ASHRAE: American Society of Heating, Refrigerating, and Air Conditioning Engineers
- E. ASME: American Society of Mechanical Engineers
- F. Commissioning (Cx): Technical and administrative process of advancing building systems from traditional project delivery to full dynamic operation which meet University operational needs and design intent.
- G. Commissioning Authority (CA): Individual who will oversee the Cx process and stipulate many of the Cx requirements intended to demonstrate systems operation in accordance with design intent and University operational needs.

- H. Commissioning Team (CT): Group of individuals who will collaborate to execute and document the commissioning process. This will include the CA, University's Representative(s), the Design Team, and the Contractor. The installing contractor, subcontractor, and/or manufacturer will be an integral member of the team for any given system or piece of equipment.
- I. Construction Phase: Phase of project during which facility is constructed and/or systems and equipment are installed and started, Contractor and subs complete installation, start-up forms, submit O&M information, establish trends, etc. Contractor/Vendors conduct equipment specific training. Construction phase will generally end upon substantial completion and occupancy.
- J. Contractor: As used herein is a general reference to the applicable installing party and can therefore refer to the General Contractor, subcontractors, or vendors.
- K. Contractor's Commissioning Coordinator (CxC): Individual who will be the CA's primary point of contact with the General Contractor. The CxC shall be an experienced MEP coordinator (min 5 years of experience) and shall be responsible for communication of commissioning requirements to the subcontractors, and oversight of contractors' implementation of commissioning procedures.
- L. Deficiency: Condition that is not in conformance with contract documents and/or design intent, and/or does not meet University's operational needs.
- M. Building Automation System (BAS): the computer-based control or automation system (also referred to as Building Management System (BMS)).
- N. Functional Completion: Milestone that marks the successful completion of the Acceptance Phase. Generally, the point in time where successful functional performance testing in the initial season is complete.
- O. Functional Performance Testing (FPT): Demonstration of systems performance through dynamic testing of equipment under various modes of operation and conditions.
- P. Party: Individual, company or entity. Refer to the Commissioning Plan for names and definitions.
- Q. Preliminary Service: Systems/equipment being used by the occupants although final adjusting, balancing, and functional performance testing is still being performed.
- R. Pre-Test: Preliminary testing accomplished during a scheduled system outage to verify system functionality prior to placing the system/equipment into preliminary service.
- S. Project Phases: Phases or project include Construction Phase, Acceptance Phase, and Warranty Phase.
- T. Start-up: Process whereby a contractor verifies proper installation of a device or piece of equipment, executes manufacturer's starting procedure, completes start-up checklist, energizes device, and basically verifies it is in proper working order.
- U. TAB: Testing, Adjusting and Balancing, as generally specified in Section 23 05 93 Tests and Balancing.
- V. TAB Verification Testing: Process where TAB reports are reviewed and accuracy is verified. The verification testing is performed by the TAB contractor and witnessed by the Commissioning Authority.
- W. Warranty Phase: Includes early occupancy of building and can continue through warranty period and at least into the opposite season from when it was initially tested.

1.5 REFERENCE STANDARDS

- A. Air Movement and Control Association, Inc. (AMCA)
- B. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)
- C. Electronics Industry Association /Telecommunications Industry Association (EIA/TIA)
- D. National Electric Code (NEC)
- E. Illuminating Engineering Society (IES)
- F. Institute of Electrical and Electronics Engineers (IEEE)
- G. International Electrical Testing Association (NETA)
- H. Midwest Insulation Contractors Association (MICA)
- I. National Electrical Manufacturers Associates (NEMA)
- J. National Fire Protection Association (NFPA)
- K. Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA)
- L. Underwriters Laboratory, Inc. (UL)

1.6 DOCUMENTATION

- A. [EDIT AS NECESSARY]

1.7 SEQUENCING AND SCHEDULING

- A. Cx Scheduling: Contractor shall incorporate the commissioning process into the project schedule. Start-Up, TAB, Quality Control (QC) Testing, and Functional Performance Testing shall be itemized as applicable for each system/area. CA will dictate duration for the tasks. Contractor shall establish a construction schedule such that the Functional Completion of systems in the Commissioning Program is accomplished before Substantial Completion and within the Contract Time.
- B. Prerequisites to FPT Scheduling:
 - 1. Contractor shall have successfully completed all required hydronic systems inspections - pressure tests, flushing, venting, chemical treatment, insulation, and identification of systems including flow direction arrows.
 - 2. Contractor shall have successfully completed all required air systems inspections – duct leakage pressure tests, insulation, and installation of final clean filters.
 - 3. Contractor shall have successfully completed, submitted, and has approval for Start-up procedures for all equipment.
 - 4. Contractor shall have successfully completed, submitted, and has approval for TAB procedures for all equipment. TAB contractor shall have completed, at a minimum, the first pass of initial balancing of all systems and transmitted preliminary pressure control setpoints

for variable speed pumps and fans to the controls subcontractor. Final TAB and controls fine tuning will occur during FPT.

5. Contractor shall have installed all controls, successfully performed all point-to-point communication continuity tests, calibrated control points, programmed all controls logic, and set initial setpoints including those provided by TAB contractor.
6. Contractor shall have successfully completed, submitted, and has approval for FPT procedures (scripts) for all equipment.

1.8 COMMISSIONING AUTHORITY RESPONSIBILITIES

A. Construction Phase

1. Chair periodic team Cx coordination meetings, record and issue minutes.
2. Prepare construction phase commissioning documentation including:
 - a. Installation and Pre-functional Verification Checklists.
 - b. Functional Performance Test Procedures.
 - c. Review applicable project documentation (shop drawings, product data, TAB reports, record drawings, O&M information, etc.) for systems to be commissioned. Forward concerns to University design team and CxC.
 - d. Review and approve start-up checklist forms prepared by Contractor and Manufacturer's Representatives.
 - e. Provide periodic on-site observations; prepare site observation report, forward report to design team, University's Representative, and CxC.
 - f. Attend selected progress meeting to observe progress and help expedite completion.
 - g. Coordinate functional performance tests (preparation and scheduling, monitoring and documenting).
 - h. Coordinate schedule of commissioning activities with CxC.
 - i. Maintain a building deficiency Issues Log.
 - j. Consult with Design Team to make recommendations for how items in the building deficiencies Issue Log might be remedied.

B. Acceptance Phase

1. Verify (spot check) control component calibration.
2. Coordinate functional tests for systems and equipment (monitoring and documenting).
3. Coordinate system level training as needed with the University's Representative.
4. Record unresolved building deficiencies in a final Issues Log.

1.9 CONTRACTOR RESPONSIBILITIES

A. Construction Phase

1. Perform quality work as outlined in Contract documents. Completely install and thoroughly inspect, start-up, test, adjust, balance, and document all systems and equipment prior to Acceptance Phase.
2. General Contractor shall ensure that all subcontractors are required, in their contracts, to comply with the requirements of this Section.
3. Attend commissioning coordination meeting called by CA.
4. Include Cx requirements in work plan, Itemize individual Cx tasks by system/area in the project schedule.
5. Prepare and submit draft forms (start-up checklist) including systems information for documentation of system checkout and calibration.

6. Complete approved start-up checklists and submit along with other installation certification information such as balancing reports, warranties, testing results, etc.
7. Schedule and coordinate Cx efforts required by appropriate subcontractors and vendors, Participate in respective portions or startups and training.
8. Fully demonstrate system operation in accordance with functional performance test procedures.
9. Certify that systems have been installed and are operating per Contract Documents.
10. Submit all O&M information, instruction postings and diagrams, etc.
11. Maintain an updated set of record documentation.
12. Schedule and coordinate training efforts required by appropriate subcontractors and vendors.

B. Acceptance Phase

1. Demonstrate full system operation at direction of CA.
2. Correct any work not in accordance with Contract Documents.
3. Provide certified and calibrated instrumentation and take measurements of system and equipment performance characteristics during Functional Performance Testing.
4. Maintain current record drawings and documentation to reflect any changes made during this phase.

C. Warranty Phase

1. Remedy any installation related deficiencies.
2. Maintain current record drawings and documentation to reflect any changes made during this phase.
3. Provide warranty services as specified in the contract documents.
4. Conduct seasonal or deferred testing as required and directed by the CA.

1.10 CONTRACTOR NOTIFICATION

- A. Contractor shall completely install, thoroughly inspect, start-up, test, adjust, and balance systems and equipment. All activities shall be documented on specific forms. Contractor shall notify Commissioning Team in writing that systems are complete and ready for verification.
- B. Contractor shall notify CA at least 14 days in advance of any tests, start-ups, or training. CA may witness selected tests and start-ups.

1.11 START-UP CHECKLISTS AND MANUFACTURER'S START-UP INSTRUCTIONS

- A. Start-up checklists for each type of equipment and system shall be submitted by Contractor to Commissioning Authority for review and comment prior to start-up. General guidelines for developing the Start-Up checklists are provided in the technical sections of this project manual. Contractors shall use the general guidelines in this project manual, manufacturer recommended start-up procedures and Contractor developed start-up checks to develop the Start-Up Checklist. Appropriate subcontractors or vendors shall provide specific forms meeting the requirements of the Contract Documents.
- B. Start-up checklists shall generally include the following for each type of equipment (as applicable):

EDIT THE FOLLOWING TO SUIT THE PROJECT NEEDS.

1. **Project specific designation, location and service.**

2. Pertinent nameplate data.
3. Indication of party performing test including contact data.
4. Place for signature of start-up technician along with date executed.
5. Clear explanation of inspection, test, measurement etc. with a pass/fail indication and record of measured parameters. Where measured parameters can fall in a range, cite the range as well as the measurement.
6. Include a checklist item indicating all O&M instructions, periodic maintenance schedules, and warranties record documents have been completed and submitted.
7. Include a checklist item for proper maintenance clearances maintained.
8. Include a checklist item indicating that special tools and/or spare tools required were turned over to University and document who that individual is by name and phone number.
9. Include checklist items indicating all required prerequisite auxiliary equipment and systems that will need to be successfully started and functioning prior to start-up of primary equipment.

C. Start-up checklists shall incorporate the manufacturer-specified procedures. Contractor shall compile the start-up and check out procedures indicated in the manufacturer's documentation prior to designing forms. As applicable, include acceptance criteria specified therein...

D. Completed Start-up checklists for all pieces of equipment shall be submitted by Contractor to Commissioning Authority prior to verification and performance testing.

1.12 TRENDING FROM BAS

A. Trending logs and graphs shall be made during the functional performance testing of various systems to document the responses of the controls systems. Remote access to the Building Management System shall be made available to the CA by Contractor.

B. CA will analyze trends of the system operating parameters to evaluate acceptable system functionality. The requirements of trending are specified with FPT procedures and in Section 23 08 00. Contractor shall establish these trends, ensure they are being stored properly, and forward the data in electronic format to the CA. Contractor shall confirm required data format with CA.

1.13 FUNCTIONAL PERFORMANCE TESTING

A. Participation: CA will direct and witness functional performance tests after successful start-up and documentation of systems and equipment is complete. Conceptual procedures for functional performance testing are outlined in Part 3 of this specification section. Contractor will generally execute tests by manipulation of systems or equipment, and provide all necessary supporting equipment or materials (lifts, ladders, specialty test equipment, etc.) and perform on spot remediation of minor identified deficiencies.

B. Detailed Test Forms: CA will prepare detailed testing procedures and forms for functionality testing systems (FPT). These will be developed during the construction phase and completed during the acceptance phase.

C. Completeness: All systems must be completed and ready for FPT. TAB and QC Testing must be complete and the control systems must be tested and started for the respective system or component.

D. Test Documentation: CA will witness functional testing of systems. CA will record test results on the forms developed for the testing. CA will Pass or Fail the testing and record the date and time

of the test. Deficiencies shall clearly be indicated when the test is failed. When all related testing is completed successfully, CA shall recommend acceptance of the system or component.

- E. Deficiencies and Re-testing: When deficiencies are identified during testing, depending on their extent or magnitude, they can be corrected during the test and the testing can continue to successful completion. More significant deficiencies will require failure of the test and re-testing. Deficiencies of this magnitude will result in an action item on the Action List. The CA will then subsequently track the resolution of the deficiency via the Action List. All tests shall be repeated until successful completion.
- F. Opposite Season Testing: "Opposite Season" testing may be required where scheduling prohibits thorough testing in all modes of operation during the period of functional performance testing. Typically Opposite Season Testing, if required, is done during the first six months of the Warranty Period. Upon completion of the primary functional performance test period, the CA will make a determination on the scope opposite Season Testing that will be required.

1.14 FPT ACCEPTANCE CRITERIA

- A. Acceptance criteria for tests shall be indicated in the Cx plan prepared by the CA and in the specification sections applicable to the systems being tested. Generally, unless indicated otherwise, the criteria for acceptance will be that specified with the individual system, equipment, component, or device.

1.15 TRAINING

- A. Contractors, Subcontractors, Vendors, etc. shall prepare and conduct training sessions on the installed systems and equipment they are responsible for. Generally, the CA and Design Engineer shall conduct systems overview, design intent, and design criteria training. The contractor shall perform all other training. Contractor shall submit a written training agenda two (2) weeks prior to scheduling training session to allow for sufficient notice for Physical Plant to schedule appropriate personnel to attend.
- B. Training sessions should typically start and end in a classroom setting. Contractor shall coordinate with University Representative to identify and secure an appropriate venue space to conduct training. Field demonstrations will also typically be conducted to demonstrate the hands-on aspects of the required tasks
- C. Appropriate contractor or vendor who is highly knowledgeable of the equipment and systems to be trained on shall instruct University's designated representative(s) on the safe and proper operation, maintenance, diagnosis, and repair of each piece of specific equipment. Contractor shall submit a written training agenda two (2) weeks prior to scheduling a training session to allow for sufficient notice for Physical Plant to schedule appropriate personnel to attend. Submitted training agenda shall include at a minimum:
 - 1. Conceptual overview of how the equipment works.
 - 2. Name, addresses, numbers etc. of sources for information, tools, spare parts, etc. for the equipment.
 - 3. Details of the warranty of guarantee.
 - 4. Intended sequences of operation in all modes of operation.
 - 5. Limits of responsibility (ex: unit mounted control vs. BAS).
 - 6. Sources of utility support.
 - 7. Routine operator tasks involving monitoring and operation covering all modes of operation and mode switching as applicable.

8. Common problems and their diagnosis and repair.
 9. Proper maintenance schedules, tasks and procedures with the demonstrations.
 10. Emergency response, documentation and recovery procedures.
- D. Contractor shall confirm with University's Representative for the number of copies of training materials to be provided prior to commencement of training, but shall be at a minimum three (3) copies of all visual aids used as a means of instruction such as binders of typewritten or graphical information, video presentations, slide shows, etc. for reference by future trainees.
- E. Training on the proper use and operation of the control system is specified in the control Section. Controls contractor shall also participate in the overall systems training for all building systems requested by the University. Duration of such training requirements shall be mutually agreed upon prior to system completion or as specified in individual project contract sections.

PART 2 - PRODUCTS

2.1 INSTRUMENTATION

- A. Instrumentation required to verify readings and test system and equipment performance shall be provided by Contractor and made available to Commissioning Authority. Generally, no equipment will be required beyond that required to perform Contractors work under these Contract Documents.
- B. All software used in the installation, setup, programming and operation of the equipment installed will be provided by the Contractor and upon project completion become the property of the University.

PART 3 - EXECUTION

3.1 GENERAL

- A. Contractor shall be responsible for developing, executing and documenting equipment installation, start-up, check out and pre-functional testing for systems and equipment prior to the CA scheduling the functional performance test.
- B. Contractor shall also be responsible for providing training for the building maintenance staff in accordance with project requirements.
- C. Functional Test Procedures shall be developed by the CA and executed by the Contractor. General Functional Test Procedures are included in this Section to present a general level of effort required by the Contractor for executing the FTP. Final FTP shall be developed based on Contractor submittals.
- D. More specific information regarding system installation, start-up, pre-functional and functional performance testing is found in the technical specification section pertaining to the system being commissioned.

3.2 GENERAL FUNCTIONAL PERFORMANCE TEST PROCEDURES

- A. CT shall have the required submitted documentation conveniently located near the testing area. CA shall validate that all required documentation has been submitted per the requirements.
- B. CT shall review the start-ups tests and checklist documentation prior to commencement of FTP. The checklists and start-up tests/measurements shall be spot checked at the beginning of FPT.
- C. Contractor shall assure and demonstrate that access is sufficient to perform required maintenance.
- D. Trends on control systems shall have been established as specified in the final FPT. These shall generally be reviewed by CA prior to or during FPT.
- E. All dynamic systems powered by electricity shall be tested to simulate a power outage to verify proper automatic restart.
- F. CT shall perform testing of all systems failure and safety sequences for proper alarming and response.
- G. Capacities and adjusted and balanced conditions as applicable will be checked by CT.
- H. Sequencing Verification: All modes of operation and actions shall be verified by CT for all equipment and systems.
- I. CT shall compare equipment and systems configuration against the contract documents.
- J. CT shall verify all modes (heating and cooling for instance) are coordinated and do not overlap or "fight."
- K. All adjusted, balanced, controlled systems shall be assessed by CT to determine the optimal setting for the system as applicable. The optimal settings should be determined to establish reliable, efficient, safe, and stable operation of equipment and systems.
- L. Dynamic Graphics: The graphic for all components, systems, and areas sampled and required to be represented by a graphic shall be checked for adequacy and accuracy. Furthermore, when setpoints are required to be adjustable, verify that they can be adjusted directly from the graphic screen.
- M. TAB Verification of Mechanical Systems.
- N. Spot Check calibration of control devices and for stable control response and component performance including cooling coils, hot water coils, economizer cycles, etc. Verify proper coordination of control loops.
- O. Review of BAS. Spot check points, sensors, setpoints feedbacks and responses through a random sample population typically twenty-five to fifty percent of the total of device types. Acceptance of systems shall be based on failure rates ranging from zero to five percent of sample population depending on the type of device.
- P. Systems with multiple devices that are not reviewed by governing authorities and/or agencies such as lighting occupancy sensors shall be checked utilizing a random sample population, typically then percent with an acceptable failure rate ranging from zero to five percent.
- Q. Functional Testing of all systems connected to Emergency and Standby Power shall be performed with the generators operating and with Normal Power available.

3.3 DOCUMENTATION OF TEST RESULTS AND FOLLOW-UP

- A. Deficiency Report and Resolution Record: Document items of non-compliance in materials, installation or operation.
- B. Non-Conformance: Non-conformance and deficiencies observed shall be addressed immediately, in terms of notification to responsible parties, and providing recommended actions to correct deficiencies. Corrections of minor deficiencies identified may be made during the tests at the discretion of the CA. In such cases the deficiency and resolution shall be documented on the procedure form.

For identified deficiencies:

- a. If there is not dispute on the deficiency and the responsibility to correct it:
 - 1) The CA documents the deficiency and the adjustments or alterations required to correct it. The Contractor corrects the deficiency and notifies the Commissioning Authority that the equipment is ready to be retested.
 - 2) The CA reschedules the test and the test is repeated.
- b. If there is a dispute about a deficiency or who is responsible:
 - 1) The deficiency is documented on the non-compliance form and a copy is given to the University's Representative and Design Engineer.
 - 2) Resolutions are made at the lowest management level possible. Additional parties are brought into the discussions as needed. Final authority is with the University.
 - 3) The CA documents the resolution process.
 - 4) Once the interpretation and resolution have been decided, the appropriate party corrects the deficiency and notifies the CA that the equipment is ready to be retested. The CA may reschedule the test, and the test may be repeated until satisfactory performance is achieved.
- c. Cost of Retesting: Costs for retesting beyond the initial test and one retest shall be charged to the party responsible for the deficiency.
- d. Costs for additional testing over and above those listed above will be the responsibility of the Contractor. The CA will submit costs to the University and these costs will be deducted from the Contractor Contract Amount

END OF SECTION 01 91 00