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SUMMARY OF THE WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK INCLUDED IN THE CONTRACT

- A. Project Identification: Name of Project Project Location: - Location description
- B. Owner: California State University, The Board of Trustees of the California State University (Trustees).
- C. Architect: Name and address
- D. Work Included in the Contract: All construction and services required for a [_BRIEF_PROJECT_DESCRIPTION_], California Building Code (CBC) Type [____] construction, of approximately [____] sf floor area, including:

THE FOLLOWING ARE EXAMPLES ONLY. EDIT TO SUIT PROJECT REQUIREMENTS.

*****	***************************************
1.	Site preparation.
2.	Site utilities.
3.	Site paving.
4.	Landscape irrigation system and landscape planting.
5.	Site fencing and site appurtenances.
6.	New [FACILITY DESCRIPTION].
7.	Plumbing and heating, ventilating and air conditioning systems.
8.	Wet-pipe fire suppression (sprinkler) system, to be provided on a design/build basis, with
	deferred approval by Code authority having jurisdiction, to suit the requirements of the facility
	and conforming applicable Codes, ordinances and standards of authorities having
	jurisdiction.
	a. Private fire service main shall be provided as indicated on Civil Drawings.
	b. Details of connections to private fire service main shall be included according to
	approved design/build wet-pipe fire suppression system.
9.	Electrical power, lighting and signal systems.
10.	Coordination of work being performed by others under separate contracts with University,
	described in Article below titled "CONCURRENT WORK UNDER SEPARATE
	CONTRACTS."
11.	Additional general information concerning the Project is provided on the Architectural
	Drawings.

1.3 TYPE OF CONTRACT

A. Describe contract delivery method

1.4 CONCURRENT WORK UNDER SEPARATE CONTRACTS

A. Work Under Separate Contracts: University may award separate design and construction contracts concurrent with this Contract and in the future, as determined by the University, for work listed below and for other work as University may determine. Such work under separate contracts may be indicated on the Drawings and in the Specifications as "Not in Contract", "NIC", "Future" or "Under Separate Contract".

 1.
 [_DESCRIPTION_].

 2.
 [_DESCRIPTION_].

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3. [ DESCRIPTION ].
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- B. Relationship to Work Under the Contract: Work under the Contract shall include all provisions necessary to make such concurrent work under separate contracts complete in every respect and fully functional, including field finishing. Provide necessary backing, supports, piping, conduit, conductors and other such provisions from point of service to point of connection, as shown on Drawings and specified herein. See Section 01310 Project Management and Coordination for additional requirements.
- C. Documents for Work Under Separate Contracts: University's Representative will make available, in a timely manner, drawings and specifications of work under separate contracts for coordination and further description of that work.
 - 1. If available, such information will include drawings, specifications, product data, lists and construction schedules for such work.
 - 2. Information concerning work under separate contracts or directly by University will be provided for convenience only and shall not to be considered Contract Documents.
- D. Permits, Notices and Fees for Work under Separate Contracts: Notices required by and approvals required of, authorities having jurisdiction over work under separate contracts and related fees, will be solely the responsibility of University.

1.5 PROTECT THE WORK FROM VANDALISM

- A. During Work Hours. Protect the Work from theft, vandalism, and unauthorized entry. The Contractor shall have the sole responsibility for job site security.
- B. During Off-Work Hours. During all hours that Work is not being prosecuted, furnish such watchman's services as Contractor may consider necessary to safeguard materials and equipment in storage on the Project site, including Work in place and in process of fabrication, against theft, acts of malicious mischief, vandalism, and other losses or damages.

1.6 ALTERATIONS WORK DESCRIPTION

INCLUDE THIS ARTICLE FOR REMODELING AND RENOVATION PROJECTS. EDIT TO SUIT PROJECT REQUIREMENTS.

A. Alterations Work Description: [Remodel] [Renovate] the following areas, complete including operational mechanical and electrical Work:

- 1. [_DESCRIPTION_].
- 2. [_DESCRIPTION_].
- 3. [_DESCRIPTION_].
- 4. [_DESCRIPTION_].

<mark>B.</mark>	Refinishing: Refinish all surface areas of the following, as specified:
	1. [_DESCRIPTION_].
	2. [_DESCRIPTION_].
	3. [_DESCRIPTION_].
	4. [DESCRIPTION].

C. In addition to specified replacement of equipment and fixtures restore existing plumbing, heating, ventilation, air conditioning, electrical, and [____] systems to full operational condition.

1.7 OWNER-FURNISHED/CONTRACTOR-INSTALLED PRODUCTS

- A. Owner-Furnished/Contractor-Installed (OFCI) Products: University will furnish, for installation by Contractor, products which are identified on the Drawings and in the Specifications as "OFCI (Owner-Furnished/Contractor-Installed)", "installed by General Contractor," or similar terminology. See Drawings for identification of such products. Refer to Section 01640 Owner-Furnished Products.
- B. Relationship to Work Under the Contract: Work under the Contract shall include all provisions necessary to fully incorporate such products into the Work, including, as necessary, fasteners, backing, supports, piping, conduit, conductors and other such provisions from point of service to point of connection, and field finishing, as shown on Drawings and specified herein. See Section 01640 - Owner-Furnished Products for additional requirements.

1.8 PERMITS, LICENSES AND FEES

- A. Permits, Licenses and Fees, General: Refer to Contract General Conditions, Article 4.11.
- B. Licenses: Contractor shall obtain and pay all licenses associated with construction activities, such as business licenses, contractors' licenses and vehicle and equipment licenses. All costs for licenses shall be included in the Contract Amount.
- C. Parking Fees: Contractor shall obtain and pay for all parking permits and fees for vehicles parked off of the Construction Site. Refer to Section 01550, Vehicular Access and Parking for additional parking requirements.

1.9 PARTNERING

A. The Trustees intend to encourage the foundation of a cohesive partnership with the Contractor and its Subcontractors, the Architect and its consultants, and the Trustees. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient Contractor performance, intended to achieve completion within budget, on schedule, and in accordance with the Contract Drawings and Specifications.

1.9 LEED REQUIREMENTS

A. The project will be a LEED documented project. The General Contractor is required to provide to the project full-time LEED Accredited personnel for the positions of Project Manager and Project Engineer. Subcontracted firms providing LEED documentation services will not be accepted and may result in a non- responsible bid.

2.0 STAFF NAMES

A. Within 15 calendar days of notice to proceed, submit a list of principal staff assignments, including superintendent, assistant superintendents, project manager, project engineers, schedulers, administrative assistants, accounting personnel and other personnel in attendance at the Project site and in the home office responsible for the project. Identify individuals and their duties and responsibilities; list addressed and telephone numbers, including home and cell telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to the project.

2.1 GLOBAL SETTLEMENT CHANGE ORDER

- A. Contractor is required to submit and execute a global settlement change order at the time of building permit set and prior to start of construction, see 01770A.
- B. Contractor is required to submit and execute a global settlement change order at the time of construction completion, see 01770A.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

END OF SECTION

WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 CONTRACTOR'S USE OF PREMISES AND SITE, GENERAL

- A. Contractor's Use of Premises and Site, General: Refer to Contract General Conditions, Article 4.00.
 - 1. Contractor shall at all times perform Work so as to impose no hardship on the Trustees or others engaged in the Trustees' work nor cause unreasonable delays or hindrance thereto.
 - 2. Construction activities shall be scheduled to minimize disruption to the University and to Campus users.
 - 3. Contractor may not interrupt any Campus utilities without prior written permission from the Trustees.

1.3 USE OF PREMISES

- A. Use of Site [*and Existing Building*]: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated.
 - Limits: Confine constructions operations to Project Area indicated on the Drawings. Use of other areas shall be only with the approval of University's Representative. Confine constructions operations to
 [Description of areas where Work is permitted].
 - 2. There may be isolated items that are outside the limits indicated, such as irrigation line connections, site light pole relocations, plant or grading adjustments, utility extensions, and similar items. The scope of items beyond the general limit indicated have been specifically indicated and are to be performed within the scope of the Project.
 - 3. University Occupancy: Where existing buildings and site areas are indicated for continued use by University, make provisions to continued use by scheduling and sequencing of Work under the Contract. Make provisions for temporary barriers, enclosures, covers, directional signage and other construction facilities and temporary controls to enable continuing use. Allow also for University occupancy of site.

1.4 CONTRACTOR'S USE OF PROJECT AREA

- A. Location of Work: The Work shall be accomplished within areas indicated on Drawings as Project Area or, if not indicated, to areas as directed by University's Representative. Use of other areas, including parking areas, shall be subject to approval by University's Representative. Refer to Section 01525 - Construction Staging Areas and Section 01550 -Vehicular Access and Parking for additional requirements.
 - 1. Contractor shall not unreasonably encumber the site with materials or equipment.
 - 2. Contractor shall assume full responsibility for protection and safekeeping of products stored on the premises.
 - 3. Contractor shall move any stored products which interfere with operations of University or contractors performing work under separate contracts for University.

- 4. Temporary closures or restrictions of use of public thoroughfares, necessary to accomplish the Work, shall be made only as approved in advance by public safety and parking authorities having jurisdiction, as directed in writing by the University's Representative.
- B. Contractor's Use of the Project Area: Unless otherwise specified or indicated on the Drawings, during the construction period the Contractor shall have full use of the designated Project Area for construction operations, including use of the site. Contractor's use of Project Area shall be limited only by University's right to perform construction operations with its own forces or to employ separate contractors on portions of the Project in accordance with the Contract General Conditions.

EDIT PARAGRAPH BELOW TO SUIT PROJECT REQUIREMENTS.

- C. Continued Use of Existing Building: Maintain existing building in a weather tight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupants during construction period.
- D. Protection of Existing Improvements and Facilities: Contractor shall protect property adjacent to the Project Area and all existing improvements and facilities within the Project Area, including paving and landscaping indicated to remain.
 - 1. All existing improvements and facilities, except those specifically indicated for removal or reconstruction, shall be protected with temporary barriers, enclosures and passageways. Refer to additional requirements specified in Section 01560 Temporary Barriers and Enclosures.
 - 2. After completion of Work, existing improvements and facilities shall be restored to original condition and location. Project Area shall be cleaned and restored to presentable condition, equivalent to or better than the condition prior to start of Work.
 - 3. Should existing improvements and facilities be damaged or soiled beyond renovation or repair, new products shall be provided by Contractor equivalent to existing products, as directed by University's Representative.
- E. Project Area Access: Limit access to site to indicated routes and access points as indicated. If routes and access points are not indicated, access shall be as approved and as directed by University's Representative. Do not restrict access to adjacent facilities and do not restrict access for those performing work under separate contracts for University.
 - 1. Access to and egress from Project Area shall be in strict conformance to prearranged routes approved by University's Representative, with the understanding that curtailment of construction traffic or revision of access routes may be required on short notice if University's operations mandate such changes because of excessive noise or problems of safety, service or supply.
 - 2. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to service and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- F. Emergency Access: Provide pathways, drives, gates, directional signage and other

provisions as required by authorities having jurisdiction for emergency access to Project Area and adjoining campus facilities.

G. Emergency Egress: Maintain all pathways, drives, gates, and other means of egress during construction as required by public safety authorities having jurisdiction.

1.5 WORK HOURS AND UTILITY RESTRICTIONS

- A. Contractor's Work Hours: Work shall be limited to Monday through Friday, except University-observed holidays and periods when classes are not in session, during hours of 7:00am to 5:00pm.
 - 1. Any exceptions or changes must be requested in writing at least two working days in advanced and approved by the University. Work on other days and at other hours shall be only with written approval of University's Representative.
 - 2. Work during final exam periods at ends of class sessions shall be restricted to minimize noise, vibrations and other distracting and inhibiting activities.
 - 3. If it becomes necessary to perform Work on weekends and holidays, in order to meet milestone and final completion dates, Work shall be performed at no change in Contract Amount unless authorized by written Change Order or Field Instruction.
 - 4 No grading on weekends or holidays.
- B. Utility Outages and Shutdown: Schedule utility outages and shutdowns to nights, weekends, school holidays or times and dates acceptable to and approved by University's Representative. Major outages shall occur during semester breaks or at other periods as approved by the university. Limit shutdown of utility services during normal business hours to I hours at a time.
 - 1. Time and duration of outages and shutdowns shall not hinder normal campus activities except as authorized in writing by University's Representative.
 - 2. Provide fourteen (14) calendar days notice in writing to University's Representative of all utility outages and shutdowns. Describe Work to be performed, which utilities will be interrupted and time and duration of interruption.
 - 3. Contractor shall provide temporary utilities to occupied facilities and adjacent properties when utilities must be interrupted for more than two hours, unless otherwise directed by University's Representative.
 - 4. Contractor shall pay all costs of his crews, including superintendents, for this work and bear reasonable Campus employee overtime costs and pay other costs associated with working other than normal work hours.
 - 5. Any damage to the existing utility systems caused by the Contractor, shall be repaired by the Contractor immediately. If Contractor is unable to repair the damage in a timely manner, and university personnel are available to fix the damage, the Contractor will be changed by the University based on the time and material spent to fix the damage. The Contractor shall be responsible for all consequences resulting from the damage.

THE FOLLOWING IS AN EXAMPLE ONLY. DELETE IF NOT APPLICABLE. IF INCLUDED, EDIT TO SUIT PROJECT REQUIREMENTS. PUT IN BID PROPOSAL IF APPLICABLE.

- 4. Power interruptions beyond the authorized time shall be subject to liquidated damages in the amount of \$5,000 per day.
- 5. Refer also to requirements for temporary utilities specified in Section 01510, Temporary Utilities.

THE FOLLOWING IS AN EXAMPLE ONLY. REVIEW REQUIREMENTS AGAINST THE CONTRACT GENERAL CONDITIONS INCLUDED IN THIS CONTRACT. DELETE IF NOT APPLICABLE. IF INCLUDED, EDIT TO SUIT PROJECT REQUIREMENTS.

1.6 NOISE AND VIBRATION RESTRICTIONS

- A. Noise Restrictions: Minimize noise from construction activities. Limit loud construction activities to times when classes are not in session in adjacent [facilities] [spaces].
- B. Vibration Restrictions: Do not perform activities that cause vibrations in adjacent occupied spaces, including spaces above and below location where Work is performed. If vibrations transmit through structure, perform Work at times when University activities are not being conducted.

1.7 UNIVERSITY'S USE OF SITE AND PREMISES

- A. University's Use of Site and Premises: University reserves the right to occupy and to place and install equipment in completed or partially completed areas of buildings and site. Such placing of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 1. Full University Occupancy: University will occupy site and existing building during entire construction period. Cooperate with University during construction operations to minimize conflicts and facilitate University usage. Perform the Work so as not to interfere with University's operations.
 - 2. Partial University Occupancy: University reserves the right to occupy and to place and install equipment in completed areas of building provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total Work.
 - 3. Trustees will issue a written contract Change Order for each specific portion of the Work to be occupied before Final Completion to release the contractor of insurance obligations and any special conditions of the partial occupancy.
 - 4. Before partial University occupancy, mechanical and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. Unless otherwise agreed, University will provide operation and maintenance of mechanical and electrical systems in portions of the building used by University. Unless otherwise agreed in writing by the University, warrantee periods shall not begin until date established by Notice of Completion filed at Contract closeout.
 - 5. Upon occupancy, University will assume responsibility for maintenance and custodial service for occupied portions of building.
 - 6. Allow Trustees access to maintain and operate other existing facilities.
 - 7. Allow vendors and service providers access through site with reasonable notice.

1.8 CAMPUS REGULATIONS

- A. Comply with Campus regulations (see Article "Compliance With Campus Regulations" in this Section and the Campus's web site at <u>www.csusm.edu</u>). Some are listed below.
 - 1. Sexual harassment: the University has adopted a strict policy prohibiting sexual harassment of any kind on campus. Contractor shall advise his employee(s) if such policy and a copy of the said policy will be provided from the Campus representative at the job start meeting. Personnel not complying with this policy shall be removed from the Project site immediately. Contractor shall advise his employees, employees of all subcontractors, and employees of suppliers, delivery drivers, and all other construction-related personnel associated with the Contractor of this regulation.

- 2. Campus Facilities: Recreational facilities and other Campus facilities are designated for the use of Campus faculty, staff and students. The Contractor and other project related personnel are not authorized to use Campus facilities, except food service facilities.
- 3. Hazardous Materials: All hazardous materials stored on site shall be appropriately labeled. Materials shall be adequately contained within berms/dikes. All hazardous materials shall be inspected for leakage by the Contractor on a weekly basis. Inventories of hazardous materials, Material Safety Data Sheets (MSDS) forms for all listed hazardous materials, and copies of weekly inspection results shall be kept on file at the Contractor's project office.
- 4. Hazardous Waste Removal: The Contractor shall submit necessary manifests and other documents to the University prior to removing hazardous materials from Campus. All materials shall be removed to approval disposal sites. No drums will be allowed to remain on Campus under any conditions.
- 5. Regulatory Compliance: the Contractor is advised to comply with all applicable safety codes. Provide copies of the contractor's injury and illness program, hazardous communications standards, and excavation permits in the Contractor's office prior to the start of construction. Maintain copies of health standards and crane safety program in the construction office at all times.
- 6. Fire Safety: Adequate numbers of portable fire extinguishers, as defined by CCR Title 19, CBC, CFC, and CAC, shall be kept on the construction site at all times. The site shall remain accessible to emergency response vehicles at all times. At no time shall the Contractor block access to other Campus buildings without coordinating an alternate route with the Campus.
- 7. Barriers: The Contractor is responsible for providing necessary barriers. Pedestrian barriers shall be if a rigid construction and continuous around the entire hazard. Plastic tape barriers are not acceptable. Hazards located outside the site fence shall have both flashing amber lights and beepers to identify the hazard at night. Barriers shall be placed immediately to eliminate potential hazards.
- 8. Drug-Free Workplace: The contractor shall comply with the Campus policy pertaining to a drug-free workplace. The Contractor shall adhere to this policy at all times.
- 9. Safety Plan: The Contractor shall follow the guidelines for safety and health as presented in the Campus Safety Program. The Contractor shall provide copies of its corporate and site-specific safety plans for review and approval prior to beginning work and shall fully cooperate with Campus safety personnel in the performance of their duties or the investigation of accidents. A copy of guidelines outlining the Campus program are attached at the end of this section.

PART 2 - PRODUCTS

Not Applicable to this Section

PART 3 - EXECUTION

Not Applicable to this Section

END OF SECTION

CONSTRUCTION AND DEMOLITION MATERIALS RECYCLING REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes: Requirements and procedures for ensuring optimal diversion of construction and demolition (C&D) waste materials generated by the Work from landfill disposal within the limits of the Construction Schedule and Contract Sum.
 - California State law (Assembly Bill 75), requires the California State University to develop source reduction, re-use, recycling, and composting programs, to reduce the tonnage of solid waste disposed in landfills 50% by the year 2004. Construction waste materials generated by the Work are targeted to achieve these diversion rates.
 - 2. The Work of this Contract requires that a minimum of 50% by weight of the construction and demolition materials generated in the Work is diverted from landfill disposal through a combination of re-use and recycling activities.
 - 3. For LEED[®] projects, requirements for submittal of LEED documentation in compliance with Materials and Resources Credit 2.1 and Materials or Resources Credit 2.2, Construction Waste Management.
 - 3. Requirements for submittal of Contractor's Construction Waste and Recycling Plan prior to the commencement of the Work.
 - 4. Contractor's quantitative reports for construction waste materials as a condition of approval of the third progress payment.

1.2 **DEFINITIONS**

- A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations. A Class III landfill must have a solid waste facilities permit from the California Integrated Waste Management Board (CIWMB) and is regulated by the Enforcement Agency (EA).
- B. Construction and Demolition Debris: Building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous as defined in California Code of Regulations, Title 22, Section 66261.3 et seq. This term includes, but is not limited to, asphalt concrete, Portland cement concrete, brick, lumber, gypsum wallboard, cardboard and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe, and steel. The debris may be commingled with rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.
- C. C&D Recycling Center. A facility that receives only C&D material that has been separated for reuse prior to receipt, in which the residual (disposed) amount of waste in the material is less than 10% of the amount separated for reuse by weight.
- D. Disposal. Final deposition of construction and demolition or inert debris into land, including stockpiling onto land of construction and demolition debris that has not been sorted for further processing or resale, if such stockpiling is for a period of time greater than 30 days; and construction and demolition debris that has been sorted for further processing or resale, if such stockpiling is for a period of time greater than one year, or stockpiling onto land of inert debris that is for a period of time greater than one year.

- E. Enforcement Agency. Enforcement agency as defined [i.e. in Public Resources Code 40130].
- F. Inert Disposal Facility or Inert Waste Landfill: A disposal facility that accepts only inert waste such as soil and rock, fully cured asphalt paving, uncontaminated concrete (including fiberglass or steel reinforcing rods embedded in the concrete), brick, glass, and ceramics, for land disposal.
- G. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- H. Mixed Debris Recycling Facility: A processing facility that accepts loads of commingled construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing the non-recyclable residual materials.
- I. Recycling: The process of sorting, cleansing, treating and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
- J. Reuse. The use, in the same or similar form as it was produced, of a material which might otherwise be discarded.
- K. Separated for Reuse. Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream for the purpose of additional sorting or processing those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw material for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace, and includes materials that have been "source separated."
- L. Solid Waste: All putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. "Solid waste" does not include hazardous waste, radioactive waste, or medical waste as defined or regulated by State law.
- M. Source-Separated: Materials, including commingled recyclables, that have been separated or kept separate from the solid waste stream at the point of generation for the purpose of additional sorting or processing of those materials for reuse or recycling in order to return them to the economic mainstream in the form of raw materials for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace.
- N. Waste Hauler: A company that possesses a valid permit from the local waste management authority to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal in the locality.

1.3 SUBMITTALS

- A. Contractor's Construction Waste and Recycling Plan
 - 1. Review Contract Documents and estimate the types and quantities of materials under the Work that are anticipated to be feasible for on-site processing, source separation for re-use or recycling. Indicate the procedures that will be

implemented in this program to effect jobsite source separation, such as, identifying a convenient location where dumpsters would be located, putting signage to identify materials to be placed in dumpsters, etc.

- 2. Prior to commencing the Work, submit Contractor's Construction Waste and Recycling Plan. Submit in format provided (Section 01151A). The Plan must include, but is not limited to the following:
 - a. Contractor's name and project identification information;
 - b. Procedures to be used;
 - c. Materials to be re-used and recycled;
 - d. Estimated quantities of materials;
 - e. Names and locations of re-use and recycling facilities/sites;
 - f. Tonnage calculations that demonstrate that Contractor will re-use and recycle a minimum 50% by weight of the construction waste materials generated in the Work.
- 3. Contractor's Construction Waste and Recycling Plan must be approved by the Construction Administrator prior to the start of Work.
- 4. Contractor's Construction Waste and Recycling Plan will not otherwise relieve the Contractor of responsibility for adequate and continuing control of pollutants and other environmental protection measures.
- B. Contractor's Reuse, Recycling, and Disposal Report
 - Submit Contractor's Reuse, Recycling, and Disposal Report on the form provided (Section 01151B) with each application for progress payment. Failure to submit the form and its supporting documentation will render the application for progress payment incomplete and delay progress payments. If applicable, include manifests, weight tickets, receipts, and invoices specifically identifying the Project for re-used and recycled materials:
 - a. Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick).
 - b. Salvaging building materials or salvage items at an off-site salvage or reuse center (i.e. lighting, fixtures).
 - c. Recycling source separated materials on site (i.e. crushing asphalt/ concrete for base course, or grinding for mulch).
 - d. Recycling source separated material at an off site recycling center (i.e. scrap metal or green materials).
 - e. Use of material as Alternative Daily Cover (ADC) at landfills.
 - f. Delivery of soils or mixed inerts to an inerta landfill for disposal (inert fill).
 - g. Disposal at a landfill or transfer station (where no recycling takes place).
 - h. Other (describe).
 - 2. Contractor's Reuse, Recycling, and Disposal Report must quantify all materials generated in the Work, disposed in [Class III] landfills, or diverted from disposal through recycling. Indicate zero (0) if there is no quantity to report for a type of material.
 - 3. indicated on the form:
 - a. Report disposal or recycling either in tons or in cubic yards: if scales are available at disposal or recycling facility, report in tons; otherwise, report in cubic yards. Report in units for salvage items when no tonnage or cubic yard measurement is feasible.

- b. Indicate locations to which materials are delivered for reuse, salvage, recycling, accepted as daily cover, inert backfill, or disposal in landfills or transfer stations.
- c. Provide legible copies of weigh tickets, receipts, or invoices that specifically identify the project generating the material. Said documents must be from recyclers and/or disposal site operators that can legally accept the materials for the purpose of re-use, recycling, or disposal.
- d. Indicate project title, project number, progress payment number, name of the company completing the Contractor's Report and compiling backup documentation, the printed name, signature, and daytime phone number of the person completing the form, the beginning and ending dates of the period covered on the Contractor's Report, and the date that the Contractor's Report is completed.
- C. For LEED Projects, LEED Letter Template: Materials and Resources Credit [2.1 or 2.2] Construction Waste Management

Complete and sign LEED Letter Template in format provided under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program. Prepare Letter Template on company letterhead.

- Certify that the project has completed a waste management plan and diverted construction, demolition, and land clearing waste to uses other than landfill.
- Provide quantities of diverted materials and means of diversion in the table provided in the LEED Letter Template.
- 3. Indicate how and where waste was diverted.
- 4. Indicate quantities of waste diverted in tons [or cubic yards].
- Letter Template will calculate: Total quantity of diverted waste, total quantity of waste, and the percentage of waste diverted.
- For projects where 50% of waste is diverted, one LEED credit will be achieved; where 75% is diverted, two LEED credits will be achieved.
- 7. Include name, organization, role in project, provide signature and date completed.
- D. Application for Progress Payments: The Contractor shall submit with each Application for Progress Payment a Summary of Waste Generated by the Project. Failure to submit this information shall render the Application incomplete and shall delay the Progress Payment.

PART 2PRODUCTS

(Not used.)

PART 3EXECUTION

3.1 SALVAGE, RE-USE, RECYCLING AND PROCEDURES

- A. Identify re-use, salvage, and recycling facilities.
- B. Develop and implement procedures to re-use, salvage, and recycle new construction and excavation materials, based on the Contract Documents, the Contractor's Construction Waste and Recycling Plan, estimated quantities of available materials, and availability of recycling facilities. Procedures may include on-site recycling, source separated recycling, and/or mixed debris recycling efforts.

- 1. Identify materials that are feasible for salvage, determine requirements for site storage, and transportation of materials to a salvage facility.
- 2. Source separate new construction, excavation and demolition materials including, but not limited to the following types:
 - f. Asphalt.
 - g. Concrete, concrete block, slump stone (decorative concrete block), and rocks.
 - c. Drywall.
 - d. Green materials (i.e. tree trimmings and land clearing debris).
 - e. Metal (ferrous and non-ferrous).
 - f. Miscellaneous Construction Debris.
 - g. Paper or cardboard.
 - h. Red Clay Brick.
 - Reuse or Salvage Materials
 - i. Soils.
 - Wire and Cable.
 - j. Wood.
 - k. Other (describe)
- 3. Miscellaneous Construction Debris: Develop and implement a program to transport loads of mixed (commingled) new construction materials that cannot be feasibly source separated to a mixed materials recycling facility.

3.2 DISPOSAL OPERATIONS AND WASTE HAULING

- A. Legally transport and dispose of materials that cannot be delivered to a source separated or mixed recycling facility to a transfer station or disposal facility that can legally accept the materials for the purpose of disposal.
- B. Use a permitted waste hauler or Contractor's trucking services and personnel. To confirm valid permitted status of waste haulers, contact the local solid waste authority.
- C. Become familiar with the conditions for acceptance of new construction, excavation and demolition materials at recycling facilities, prior to delivering materials.
- D. Deliver to facilities that can legally accept new construction, excavation and demolition materials for purpose of re-use, recycling, composting, or disposal.
- E. Do not burn, bury or otherwise dispose of solid waste on the project job-site.

3.3 RE-USE AND DONATION OPTIONS

A. Implement a re-use program to the greatest extent feasible. Options may include:

1. California Materials Exchange (CAL-MAX) Program is sponsored by the California Integrated Waste Management Board. CAL-MAX is a free service provided by the California Integrated Waste Management Board, designed to help businesses find markets for materials that traditionally would be discarded. The premise of the CAL-MAX Program is that material discarded by one business may be a resource for another business. To obtain a current Materials Listings Catalog, call CAL-MAX/California Integrated Waste Management Board at (916) 255-2369 or send a FAX to (916) 255-2200. The CALMAX Catalog is available through the Internet Site at http://www.ciwmb/ca.gov/calmax.

3.4 REVENUE

A. Revenues or other savings obtained from recycled, re-used, or salvaged materials shall accrue to Contractor unless otherwise noted in the Contract Documents.

END OF SECTION

SECTION 01151A

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

(Submit After Award of Contract and Prior to Start of Work)

Project Ti	tle:							
Contract or Work Order No.:								
Contractor's Name:								
Street Ad	dress:							
Citv:	City: State Zip							
Phone: (Phone: () Fax: ()							
E-Mail Ad	dress:							
Prepared	bv: (Print I	Name)						
Tioparoa		(anto)						
Date Sub	mitted:							
Project Pe	eriod:	From:			TO:			
1 10,00011								
		Reuse, Recyclin	g or Disposal	Processes To I	Be Used			
Describe the	e types of red	cycling processes or dispos	al activities th	at will be used	for material genera	ated in the pr	oject.	
Indicate the	type of proc	ess or activity by number, ty	pes of materi	als, and estima	ted quantities that	will be recyc	led or	
disposed in	the sections	below:						
01 - Reuse	of building m	aterials or salvage items on	site (i.e. crus	hed base or re	d clay brick)			
02 - Salvagi	ng building n	naterials or salvage items a	t an off site sa	alvage or re-use	e center (i.e. lightin	g, fixtures)		
03 - Recycli	ng source se	parated materials on site (i.	e. crushing as	sphalt/concrete	for reuse or grindi	ng for mulch)	
04 - Recycli	ng source se	parated materials at an off	site recycling	center (i.e. scra	ap metal or green r	natls)		
05 - Recycli	ng commingl	ed loads of C&D matls at a	n off site mixe	d debris recycli	ng center or transf	er station		
06 - Recycli	ng material a	s Alternative Daily Cover at	t landfills					
07 - Deliver	y of soils or n	nixed inerts to an inert land	ill for disposa	l (inert fill).				
08 - Disposa	al at a landfill	or transfer station.						
09 - Other (please descr	ibe)						
		Types of	Material To	Bo Conorato	4			
	l lea thas	rypes of e codes to indicate the ti	material 10	rial that will be	u a annorated on th	n nroiect		
$\Lambda = \Lambda cohol$	030 11/03	C = Concrete	M – Motale		J – Miyed Inert	G = Groop	Matle	
D = Drywa	n. 	P/C-Paper/Cardboard	W/C = Wir	/Cable	S = Soils (Non H	azardous)	Maus	
M/C = Miscellaneous Construction Debris R - Reuse/Salvage W - Wood O - Other (dec					(describe)			
Facilities Us	ed: Provide	Name of Facility and Locati	on (City)	Carrage			(46661166)	
Total Truck	Loads: Provi	de Number of Trucks Haule	ed from Site D	urina Reportina	Period			
Total Quant	ities: If scale	s are available at sites repo	ort in tons If n	ot quantify by	cubic vards. For s	alvade/reuse	items	
quantify by	estimated we	ight (or units).		ot, quantify by		alvago/10000	nomo,	
		SECTION I - RE	-USED/REC	CYCLED MAT	ERIALS			
Include	e all recycling	g activities for source separa	ated or mixed	material recycl	ing centers where	recycling will	occur.	
Type of Type Facility to be Used, Total Truck Total Quantities								
Material	of Activity	Location	-	Loads	Tons	Cubic YD	Other Wt.	
a. Total Div	version	1		-	-		-	

SECTION 011511A

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

Continued

			SECTION I	I - DISPOS	ED MATERIA	LS			
In	Include all disposal activities for landfills, transfer sta				ons, or inert landfills where no recycling will occur.				
Type of	Туре	Fa	Facility to be Used,			Total Truck Total Quantities			
Material	of Activity		Location		Loads	Tons	Cubic YD	Other Wt.	
b. Total Dis	sposal					-	-	-	
		SE	CTION III - TO	OTAL MATE	ERIALS GENE	ERATED			
This s	ection calculate	es the total ma	terials to be gene	erated during t	he project period	(Reuse/Recycle + L	Disposal = Gen	eration	
						Tons	Cubic YD	Other Wt.	
a. Total Re	used/Recyc	cled				-	-	-	
b. Total Dis	sposed					-	-	-	
c. Total Ge	nerated				l	-	-	-	
	SECT	UN IV - CO	INTRACTORS	5 LANDFIL	L DIVERSION	I RATE CALCUL	ATION		
-			Add totals		On I + Section	// Other W/t			
a Materiala Re Llead and Recycled									
h Material	a. Materials Re-Used and Recycled -								
c Total Ma	p. Intalenais Disposed								
d Landfill I	Diversion Ra	ate (Tons O	$\frac{0.2}{0.0}$	#DIV/0!			-		
* Lleo tone	only to calc	ulate recycl	ling percentag	as: Tons P	l ausod/Rocycli	od/Tons Conora	tod – % Por	weled	
030 10/13	Unity to calc	ulate recycl	ing percentag		euseu/Necych			ycieu	
Contractor	s Comment	s (Provide a	any additional	information	pertinent to p	lanned reuse, re	ecycling, or o	disposal	
activities):									
Notes:									
1. Section 0	1151A is a D	IVISION 01 Ge	eneral Requiren	hent under C	SI MasterForm	at 1998 Edition.			
For Usi masterFormat 2004 Edition, this Section may be renumbered as follows:									
Under Div	/ISION UU, Pro	Construction	Id Contracting F	kequirements	s, Project Form	s 00 60 00			
Use: Sec	1011 00 62 22	Construction	i vvaste Diversi	un Pian					
2 Suggosto	d Conversion	Eactore: Er	om Cubic Varde	to Tone (Lie	o whon scalos	are not available)			
2. Suggeste		Γ CV Acoby	-610 topo	Applies to	brokon chunk	are not available)			
Concreto:	001 (57. 100) ۱۵۵۲ مه ۵۶ ۵۵	CY Concret	$a_1 = 0.10 \text{ (0115.}$	nnlies to bro	ken chunks of	s or aspirally			
Ferrous M	etals: 22 (ev		errous Metal – '	220 tone)		concrete)	Drywall Scr	an 20	
Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons) Wood Scrap: 16							27.1 <u>2</u> 0		

SECTION 01151B

CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

(Submit With Each Progress Payment)

Project Title:								
Contract or Work Order No.:								
Contractor's Name:								
Street Address:								
City:	City: State: Zip:							
Phone: ()			Fax: ()				
E-Mail Ad	dress:							
Prepared	by: (Print N	Name)						
	•							
Date Subr	nitted:							
Period Co	vered:	From:			To:			
		Reuse, Recy	cling or Dispo	sal Processes l	Jsed			
Describe the	e types of rec	cycling processes or dispose	al activities use	ed for material g	generated in the pro	oject. Indicate	e the type of	
process or a	nctivity by nui	mber, types of materials, an	nd quantities th	at were recycle	d or disposed in the	e sections be	elow:	
01 - Reuse d	of building ma	aterials or salvage items on	site (i.e. crush	ned base or red	clay brick)			
02 - Salvagii	ng building m	aterials or salvage items at	an off site sal	vage or re-use	center (i.e. lighting,	fixtures)		
03 - Recyclii	ng source se	parated materials on site (i.	e. crushing as	phalt/concrete f	or reuse or grinding	g for mulch)		
04 - Recyclii	ng source se	parated materials at an off	site recycling c	enter (i.e. scrap	o metal or green ma	atls)		
05 - Recyclii	ng commingle	ed loads of C&D matls at ar	n off site mixed	l debris recyclin	g center or transfe	r station		
06 - Recyclii	ng material a	s Alternative Daily Cover at	landfills					
07 - Delivery	of soils or n	nixed inerts to an inert landf	ill for disposal	(inert fill).				
08 - Disposa	al at a landfill	or transfer station.						
09 - Other (p	lease descri	be)						
			e ef Meteriel	O e re e reste d				
		I ype	es of Material	Generated				
	Use the	se codes to indicate the	types of mate	eriai that were	generated on the	e project	Matta	
A = Asphalt C = Concrete M = Metals I = Mixed Inert G = Green Matls							Matis	
D = Drywall P/C=Paper/Cardboard W/C = Wire/Cable S= Soils (Non Hazardous)							(deceribe)	
VV = VV = VV = VV = VV = VV = 0								
Total Truck	eu. Provide r Loads: Provid	hame of Facility and Localit de Number of Trucks Haule	d from Site Du	ring Reporting	Period			
	LUdus. FIUVIO				renou ubie verde Ferreel			
Total Quanti	ties: if scales	s are available at sites, repo	ort in tons. If no	ot, quantify by c	ubic yards. For salv	age/reuse it	ems,	
quantity by e	sumated we	SECTION L - R	E-USED/REC		FRIALS			
Incluc	le all recyclin	activities for source sena	rated or mixed	material recycl	ing centers where i	recyclina occ	urred	
Type of	Type	Facilities Use	died of mixed	Total Truck	Tota	Ouantities	uncu.	
Material	of Activity	Location	,u,	Loads	Tons	Cubic YD	Other Wt	
material	orriourity	Locaton		20000	10110			
a Total Div	version	1		-	-	_	-	

SECTION 011511B CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

Continued

			SECTION I	I - DISPOS	ED MATERIA	LS		
li	nclude all disp	oosal activitie	es for landfills, tr	ansfer statio	ns, or inert land	fills where no recy	cling occurre	<i>d.</i>
Type of Type Facilities Use			,	Total Truck	Tota	I Quantities		
Material	aterial of Activity Location				Loads	Tons	Cubic YD	Other Wt.
							1	
h Total Dis	nosal					-	-	-
b. Total Bic	pobul						1	
		SE	CTION III - TO	JIAL MATE	RIALS GENE	RATED		
Th	is section calc	ulates the total	materials genera	ted during the	project period (R	euse/Recycle + Disp	osal = Generat	ion
						Tons	Cubic YD	Other Wt.
a. Total Re	used/Recyc	led				-	-	-
b. Total Dis	posed					-	-	-
c. Total Ge	nerated					-	-	-
	SECT	ION IV - CC	NTRACTOR'S	S LANDFILI	_ DIVERSION	RATE CALCUL	ATION	
			Add totals	from Section	n I + Section			
				Tons	Cubic Yards	Other Wt.		
a. Materials Re-Used and Recycled				-				
b. Materials	s Disposed			-				
c. Total Materials Generated (a. + b. = c.)				-	-	-		
d. Landfill Diversion Rate (Tons Only)*			nly)*	#DIV/0!				
* Use tons	only to calc	ulate recycl	ling percentag	es: Tons Re	eused/Recycle	ed/Tons Generat	ed = % Rec	ycled
	_							
Contractor'	s Comment	s (Provide a	any additional	information	pertinent to p	lanned reuse, re	cycling, or a	lisposal
activities):								
Notes:								
1. Section 0	1151A is a Di	vision 01 Ge	neral Requirem	ent under CS	I MasterFormat	1998 Edition.		
For CSI MasterFormat 2004 Edition, this Section may be renumbered as follows:								
Under Division 00, Procurement and Contracting Requirements, Project Forms 00 60 00								
Use: Section 00 62 22 Construction Waste Diversion Plan								
	_							
2. Suggeste	d Conversion	Factors: Fro	m Cubic Yards	to Tons (Use	when scales a	re not available)		
Asphalt:	61 (ex. 100	0 CY Aspha	alt = 610 tons	Applies to I	proken chunks	s of asphalt)		
Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)								
Ferrous M	Ferrous Metals: 22 (ex. 1000 CY Ferrous Metal – 220 tons)							
Non-Ferro	Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons) Wood Scrap: .16							

ALLOWANCES PROCEDURES

OMIT THIS SECTION IF ALLOWANCES ARE NOT INCLUDED IN THE CONTRACT.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Allowances indicated in the Bid Proposal Form to be included in Contract Amount.
 - 1. Selected materials and equipment, and in some cases, their installation, are shown and specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. Additional requirements, if necessary, will be issued by change order.
 - 2. Allowances may be used in lieu of metering for temporary construction site utility services or to reimburse project related work performed by University forces, for example, keying.

1.3 RELATED SECTIONS

- A. Section 01510 Temporary Utilities: Coordination with Allowance for temporary power.
- B. Refer to product Specifications Sections identified in Allowance description.

1.4 GENERAL REQUIREMENTS FOR ALLOWANCES

- A. The allowance is part of the base contract work and amount; therefore no additional markup is credited to the General Contractor for work performed within the allowance by the General Contractor or and Subcontractor.
- B. Contractor shall submit cost data and other descriptive data to establish basis used by Contractor for determining costs in Contract Amount attributable to each Allowance.
- C. Any amount not fully consumed shall be adjusted by change order.
 - 1. The Contractor will be credited for his actual cost of labor, materials, and other actual costs WITHOUT mark-up.
 - 2. Any unused allowances shall be returned to the Trustees using a credit change order for the full amount of the value unused plus six (6) percent.
 - 3. Mark-up on work performed by the Subcontractor in accordance with the change order provision of the contract shall be considered as part of the credited costs of performing work within the allowance.
 - 4. Should the Contractor's actual costs exceed the specified allowance, the Contractor's Contract Amount will be adjusted by change order in accordance with Contract General Conditions, Article 6.00.

1.5 ALLOWANCE COSTS FOR CONTRACTOR-PROVIDED PRODUCTS

DELETE THIS ARTICLE IF NOT APPLICABLE.

- A. Contractor-Provided Products: Amount for each Allowance, for procurement of products to
 - be selected by University's Representative or Architect after execution of the Agreement, shall include:
 - 1. Net cost of product(s) to Contractor. Trade discounts and rebates shall be included.
 - 2. Delivery to site.
 - 3. Labor, equipment and related consumable products required for application, installation and finishing of product when Allowance is indicated to include costs for incorporation into completed construction.
 - 4. Applicable taxes, permits and fees.
- B. Costs Included in Contract Amount: In addition to amount identified for each Allowance, include in Contract Amount all costs for:
 - 1. Handling and storage at site, including unloading, uncrating, and protective measures.
 - 2. Protection from weather, soiling and physical damage.
 - 3. Labor, equipment and related consumable products necessary for application, installation or finishing, except when Allowance is indicated to include costs for incorporation into completed construction.
 - 4. Contractor's and all subcontractor's field and home office overhead expenses, bonds, insurance and profit.
 - 5. All other costs attributable to incorporation of Allowance into completed construction, such as design fees and reworking of adjoining construction.

1.6 ALLOWANCE COSTS FOR EXECUTION

DELETE THIS ARTICLE IF NOT APPLICABLE.

- A. Owner-Furnished/Contractor-Installed (OFCI) Products: Amount for each Allowance, for application, installation and finishing of products provided by University (Owner-Furnished/ Contractor-Installed products), shall include:
 - 1. Delivery to site, unless specifically noted otherwise.
 - 2. Applicable taxes, permits and fees.
 - 3. Handling and storage at site, including unloading, uncrating, and protective measures.
 - 4. Protection from weather, soiling and physical damage.
 - 5. Labor, equipment and related consumable products required for application, installation and finishing of product when Allowance is indicated to include costs for incorporation into completed construction.
 - 6. Contractor's and all subcontractor's field and home office overhead expenses, bonds, insurance and profit.
 - 7. All other costs attributable to incorporation of Allowance into completed construction, such as design fees and reworking of adjoining construction.

PART 2 - PRODUCTS

2.1 LUMP SUM ALLOWANCES

A. Allowance No. 1 - Temporary Power: Allow sum of [_AMOUNT_WORDS_] (\$[##.##] for charges for serving utility for temporary power consumed during construction.

PART 3 - EXECUTION

3.1 SELECTION OF PRODUCTS

- A. University's Representative and Architect will:
 - 1. Consult with Contractor for considerations to be given in selection of products, suppliers and qualified installers.
 - 2. Make selection in consultation with University staff. Obtain written direction by University's Representative designating:
 - a. Product, color, design and finish.
 - b. Accessories and attachments.
 - c. Suppliers and qualified installers, as applicable.
 - d. Allowance amount to be included in Contract Amount.
 - e. Construction Contract warranty and manufacturer's guarantee provisions.
- B. Contractor shall:
 - 1. Assist University's Representative and Architect in determining qualified suppliers or installers.
 - 2. Obtain proposals from suppliers and installers when directed by University's Representative.
 - 3. Make cost and constructability recommendations to University's Representative and Architect for consideration in product, supplier and qualified installer selections.
 - 4. Notify University's Representative and Architect promptly of:
 - a. Reasonable objections Contractor may have against any supplier or party under consideration for installation.
 - b. Effects on Construction Schedule anticipated by selections under consideration.

3.2 CONTRACTOR'S RESPONSIBILITIES

- A. Upon notification of selection, Contractor shall execute purchase agreement with designated supplier and enter into contract with designated qualified installer, as applicable. Should a purchase agreement already exist between University and supplier, Contractor shall assume the purchase agreement for the University.
- B. Contractor shall make all arrangements for and submit shop drawings, product data and samples as required.
- C. Contractor shall make all arrangements for pick-up, delivery, handling and storage of products.
- D. Upon delivery, Contractor shall promptly inspect products for damage or defects. Should damage or defects be found, Contractor shall effect return, replacement or repair of products, as appropriate, and process claims for transportation damage.
- E. Contractor shall apply, install and finish products in compliance with requirements of applicable Sections of Specifications.
- F. The General Contractor is responsible for the work of subcontractors, including those listed in the allowance, and material suppliers, so that their work is performed in a manner to minimize interference with, and to facilitate the progress of the work.

- G. The General Contractor is responsible for the work associated with the allowance in a manner that will insure that all work will be accomplished as rapidly as the progress of the project will permit sot that no work will be delayed for want of associated work.
- H. The General Contractor (GC) shall be responsible for all work performed under this contract and no subcontractor will be recognized as such. For purposes of assessing responsibility to the GC, all persons engaged in the work shall be considered employees of the GC. The GC shall give personal attention to the fulfillment of the contract and keep all phases of the work under its control.
- I. The University will not arbitrate disputes among subcontractors nr between the General Contractor and on or more subcontractors concerning responsibility for performing any part of the project.

3.3 ADJUSTMENT COSTS

- A. Should the net cost of the Allowance be more or less than the amount included in the Contract Amount, the Contract Amount shall be adjusted in accordance with provisions of the Contract General Conditions and a Change Order shall be executed.
- B. Adjustment shall be made only for:
 - 1. Increase or decrease in handling costs at site, labor, installation costs, overhead, profit, and other expenses resulting from final selection under Allowance.
 - 2. Increase or decrease in product cost resulting from final selection under Allowance.
 - 3. Increase or decrease in product cost from data provided by University's Representative or Architect and used to determine Allowance product cost.
 - 4. Increase or decrease in product, application, installation and finishing costs resulting from change in quantity stated in Allowance.
- C. Contractor shall submit claim and supporting documentation for cost increase or decrease within ten (10) days of execution of Construction Change Directive. Failure to submit documentation within designated time shall constitute a waiver of claims for additional costs.

END OF SECTION

BID ALTERNATIVE PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Requirements and descriptions for products and scopes of Work identified as Bid Alternative in the Drawings and Specifications and listed as "Bid Alternative " on the Bid Proposal Form.

1.3 RELATED DOCUMENTS AND SECTIONS

A. Division 2 through Division 17: Refer to product Specification Sections indicated in Bid Alternative descriptions and as may be affected by alternate products and scope descriptions.

1.4 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Trustees decide to accept as corresponding change either in the amount of construction to be completed or in the products, material, equipment, systems, or installation methods describe in the Contract Documents.
 - 1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made the Contract Sum.

1.5 GENERAL REQUIREMENTS FOR ALTERNATIVES

- A. To enable University to compare total costs where alternative materials and methods might be used or where scope of Work might be altered, Bid Alternative Work items have been established as described in this Section.
 - 1. Unless otherwise specifically provided, the work described in Alternatives shall be completed with no increase in Contract Time.
 - 2. Alternatives will be accepted in the order listed until the Construction Budget is reached.
- B. Contract Amount included in Base Bid and as stated in executed Agreement shall include all costs for Work described in Contract Documents.
- C. Contract Amount shall include all necessary provisions for Work described in alternatives, whether or not Alternatives are accepted. Base Bid specifications shall govern Work of alternatives unless otherwise specified.
- D. Bid Proposal Form or other means prescribed for submission of proposed cost of Work shall include line items for each Alternative described in this Section. No Alternatives other than as described in this Section shall be submitted, except in accordance with product

options and substitutions provisions specified in Section 01610, Basic Product Requirements.

- E. Each Alternative is identified herein by number. This identification shall be used whenever referring to Work described in Alternative and when submitting cost proposals and payment requests.
- F. Alternative construction described in Alternatives and revised scopes of Work shall be performed only when such Alternative is made a part of the Work by specific provision in the University-Contractor Agreement, if selected by University prior to execution of the Agreement, or by Change Order or Change Directive if selected subsequent to execution of the Agreement.

G. Costs for Alternatives shall be valid for no less than [<u>insert_appropriate_no._of_days_]</u> calendar days from date of Agreement, and University may select any or all Alternatives during that time. Once an Alternative is selected and the Contract modified for Work as described in the Alternative, changes to return to original scope of Work will be made only by Change Order or Change Directive in accordance with provisions of the Contract General Conditions for changes.

MAKE THIS PROJECT SPECIFIC

- H. The General Contractor is responsible for the work of subcontractors, including those listed in the allowance, and material suppliers, so that their work is performed in a manner to minimize interference with, and to facilitate the progress of the work.
- G. The General Contractor is responsible for the work associated with the allowance in a manner that will insure that all work will be accomplished as rapidly as the progress of the project will permit sot that no work will be delayed for want of associated work.
- H. The General Contractor (GC) shall be responsible for all work performed under this contract and no subcontractor will be recognized as such. For purposes of assessing responsibility to the GC, all persons engaged in the work shall be considered employees of the GC. The GC shall give personal attention to the fulfillment of the contract and keep all phases of the work under its control.
- I. The University will not arbitrate disputes among subcontractors nr between the General Contractor and on or more subcontractors concerning responsibility for performing any part of the project.

1.6 **PRODUCTS AND EXECUTION**

- A. If University elects to proceed on the basis of one or more of the described Alternatives, Contractor shall make all modifications to Work as required to provide products complete, in place and fully functional, including all labor, equipment, services and incidental consumables necessary to apply, install and finish Work described in Alternative in accordance with requirements specified in related product Sections of these Specifications.
- B. Cost for Alternatives shall be complete and include all net increases and decreases in Contract Amount for Work described in Alternative and for all changes in related Work. No claims for additional costs to University will be honored other than as stated in cost proposal for each Alternative.

1.7 SCHEDULE OF ALTERNATIVES

A.	Alternative Bid No. 1 - [_ <i>Title</i> _].
	1. Base Bid condition: [_Description_].
	2. Alternative Bid condition: [_Description_].
B.	Alternative Bid No. 2 - [_Title_].
	1. Base Bid condition: [_Description_].
	2. Alternative Bid condition: [_Description_].

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

END OF SECTION

UNIT PRICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Administrative and procedural requirements for unit prices.

COORDINATE UNIT PRICES IDENTIFIED IN THIS SECTION WITH UNIT PRICES STATED ON BID PROPOSAL FORM.

1.3 RELATED SECTIONS

VERIFY THAT SECTION TITLES REFERENCED IN THIS SECTION ARE CORRECT FOR THIS PROJECT'S SPECIFICATION; SECTION TITLES MAY HAVE CHANGED.

FIRST DIVISION 1 SECTION BELOW CONTAINS REQUIREMENTS THAT RELATE DIRECTLY TO UNIT PRICES.

1. Section 01210 - Allowance Procedures: Procedures for using unit prices to adjust quantity allowances.

RETAIN SUBPARAGRAPH BELOW ONLY IF UNIT PRICES MAY BE EMPLOYED AS A RESULT OF SPECIAL TESTING AND INSPECTING PROCEDURES REQUIRED BY LOCAL CODES AND SPECIFIED IN DIVISION 1.

2. Section 01450 - Quality Control: General testing and inspecting requirements, including those tests and inspections based on unit prices.

EDIT PARAGRAPH BELOW AND ADDITIONAL PARAGRAPHS TO IDENTIFY SECTIONS IN SPECIFICATIONS WHERE UNIT PRICES ARE USED.

- 3. Section [_Number_] [_Title_]: Procedures for measurement and payment for
 - [Description of Work].

REPEAT PARAGRAPH ABOVE AS NECESSARY TO INCLUDE ALL UNIT PRICES REQUIRED FOR

> UNIT PRICES 01270-1

1.4 DEFINITIONS

DEFINITION BELOW ASSUMES THAT CONTRACT DOCUMENTS INDICATE OR PROVIDE ESTIMATED QUANTITIES AND WHERE BIDDERS STATE ON THE BID PROPOSAL FORM UNIT-PRICE AMOUNTS THEY PROPOSE. REVISE IF BIDDERS ARE REQUIRED TO ESTIMATE QUANTITIES AS WELL AND INCLUDE THEM WITH THE BID.

- A. Unit Price: An amount proposed by Bidder and stated on the Bid Proposal as a price per unit of measurement for materials or services that will be added to or deducted from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.
 - 1. Unit prices quoted in the Bid Proposal are for additions or deletions of approved items of Work.
 - 2. All unit prices quoted shall be for the items completely installed, furnished, and operable in accordance with 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.
 - 3. Unit prices shall not apply to work the Contractor elects to do for its own convenience or to correct errors committed by the Contractor.
 - 4. All unit prices shall remain in effect for the full term of the Contract.
 - 5. Quantities listed in the Contract Documents are approximate only. Contract Amount shall be adjusted by change order using unit prices listed for actual quantities of Work performed.

1.5 PROCEDURES

USUALLY RETAIN PARAGRAPH BELOW. IT WILL SUFFICE FOR ALL BUT THE MOST COMPLEX PROJECTS. REVISE IF MANY UNIT PRICES ARE ANTICIPATED AND IF METHODS FOR MEASURING WORK-IN-PLACE ARE COMPLEX. A SPECIAL ARTICLE OR ADDITIONAL PARAGRAPHS OUTLINING PROCEDURES FOR MEASUREMENT AND PAYMENT MIGHT BE NEEDED TO DEFINE RESPONSIBILITIES FOR COMPLEX SITUATIONS.

- A. Measurement and Payment Procedures: As stated in General Conditions of the Contract. Refer to individual product Specification Sections for Work that requires establishment of unit prices. Basis of each unit price is specified in those Sections.
 - 1. Measure: University reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this Work measured, at University's expense, by an independent surveyor.

RETAIN BELOW AND REVISE TO SUIT SPECIAL PROJECT REQUIREMENTS.

- B. List of Unit Prices: A list of unit prices is included at the end of this Section. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.
- C. The Trustees are not obligated to use the unit prices.

The California State University San Marcos Project Name here Project No. SM – XXXX Date

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

IN PARAGRAPH AND SUBPARAGRAPHS BELOW, REMOVE TEXT ENCLOSED IN ANGLE BRACKETS AND INSERT TEXT TO SUIT PROJECT. SEE EVALUATIONS FOR MODEL TEXT.

A. Unit Price No. [<u>Number]</u>: [<u>Title]</u>.

- 1. Description: [_Unit_Price_Description_], according to Section [_Number_] [_Title_].
- 2. Unit of Measurement: [_Description_].

REPEAT ABOVE AS OFTEN AS NECESSARY TO INCLUDE ALL UNIT PRICES REQUIRED FOR PROJECT.

END OF SECTION

COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Coordination of Work under Contract.

1.3 RELATED SECTIONS

- A. Section 01100 Summary of the Work: Various types of Work to be coordinated, including Owner-Furnished/Contractor-Installed products and work under separate Contracts.
- B. Section 01610 Basic Product Requirements: Coordination of products, especially general requirements for system completeness and product substitutions.

1.4 COORDINATION

- A. Coordination, General:
 - 1. Coordinate the Work according to provisions stated in Contract General Conditions. Do not delegate responsibility for coordination to any subcontractor.
 - a. Anticipate the interrelationship of all subcontractors and their relationship with the total work.
 - Resolve differences or disputes between subcontractors and materials suppliers concerning coordination, interference, or extent of work between sections. The Contractor's decisions, if consistent with the Contract Documents, shall be final. The Architect is not required to coordinate work between sections and will not do so.
 - c. Coordinate the work of subcontractors and material suppliers, so that their work is performed in a manner to minimize interference with, and to facilitate the progress of the work.
 - 2. Coordinate Work under the Contract with work under separate contracts by University.
 - 3. Coordinate utility and building services shut-downs and closures of vehicular and pedestrian thoroughfares, including access to buildings and parking areas, to minimize disruption of University activities.
 - 4. Be responsible for providing anchorage, blocking, joining and other detailing as required to provide complete project.
 - 5. Do not obstruct spaces required by Code in front of electrical equipment, access doors, etc.
 - 6. Do not cover any piping, wiring, ducts, etc., until properly inspected and approved.
 - 7. Remove and replace any and all Work under any Section which is not in accordance with the Contract Documents with other materials and Work which is in conformance with the

Contract Documents. Repair or replace all other Work damaged by these operations at no increase in contract price.

- 8. This work shall be coordinated with all associated Work in a manner that will insure that all work will be accomplished as rapidly as the progress of the project will permit and so that no work will be delayed for want of associated work.
- B. Coordination of OFCI Products: Contractor shall cooperate with University and others as directed by University's Representative in scheduling and sequencing the incorporation into the Work of Owner Furnished/Contractor Installed (OFCI) products identified in the Contract Drawings and Specifications.
- C. Relationship of Contract Documents: Drawings, Specifications and other Contract Documents in the Project Manual are intended to be complementary. What is required by one shall be as if required by all. What is shown or required, or may be reasonably inferred to be required, or which is usually and customarily provided for similar work, shall be included in the Work.
- D. Discrepancies in Contract Documents: In the event of error, omission, ambiguity or conflict in Drawings or Specifications, Contractor shall bring the matter to attention of the Architect in a timely manner during the bidding period, for determination and direction by the Architect in accordance with provisions of the Contract General Conditions.
- E. Construction Interfacing and Coordination: Layout, scheduling and sequencing of Work shall be solely the Contractor's responsibility.
 - 1. Contractor shall verify, confirm and coordinate field measurements so that new construction correctly and accurately interfaces with conditions existing prior to construction.
 - 2. Contractor shall bring together the various parts, components, systems and assemblies as required for the correct interfacing and integration of all elements of Work. Contractor shall coordinate Work to correctly and accurately connect abutting, adjoining, overlapping and related elements, including work under separate contracts by University, utility agencies and companies.

1.5 COORDINATION OF SUBCONTRACTS AND SEPARATE CONTRACTS

- A. Superintendence of Work: Contractor shall appoint a field superintendent and a project manager, who shall directly and full time supervise and coordinate all Work of the Contract.
- B. Subcontractors, Trades and Materials Suppliers: Contractor shall require all subcontractors, trades, crafts and suppliers to coordinate their portions of Work with the Contractor's field superintendent to prevent scheduling, sequencing, dimensional and other conflicts and omissions.
- C. Coordination with Work Under Separate Contracts: Contractor shall coordinate and schedule Work under the Contract with work being performed for Project under separate contracts by University, serving utilities and public agencies. Contractor shall make direct contacts with parties responsible for work of the Project under separate contracts, in order to provide timely notifications and to facilitate information exchanges.

1.6 MECHANICAL AND ELECTRICAL COORDINATOR

DELETE THIS ARTICLE IF NOT APPLICABLE.

- A. Mechanical and Electrical Coordinator: Contractor shall employ and pay for services of a person, technically qualified and administratively experienced in field coordination for the type of mechanical and electrical Work required for this Project, for the duration of the Work.
 - 1. Work out all "tight" conditions involving work of various sections in advance before installation. If necessary, and before work proceeds in these areas, prepare supplementary drawings for review showing all work in "tight" areas.
 - 2. Provide supplementary drawings and additional work necessary to overcome "tight" conditions at no increase in contract price. Refer to Section 01330, "Submittal Procedures."
 - 3. Coordinated layout shop drawings shall be dimensionally accurate and detailed, giving complete dimensions of all locations, elevations, and clearances. Show exact locations of the following:
 - a. Ductwork
 - b. Piping, including fire protection systems.
 - c. Valves and piping specialties, including all air vents and drains.
 - d. Dampers
 - e. Access doors
 - f. Control and electrical panels
 - g. Adjustable frequency controllers
 - h. Motor control centers and transformers
 - i. Disconnect switches
 - j. Elevator equipment
 - k. Electrical cable trays and main conduits
 - I. Owner-furnished, Contractor-installed equipment.
 - 4. Coordinated layout shop drawings shall show actual architectural and structural constraints and site conditions.
 - 5. Coordination:
 - a. Fully coordinate work between trades with actual architectural, structural, and site conditions.
 - b. Coordinate all adjustments required. Clearly identify by circling these adjustments on the coordinated layout shop drawings.
 - c. If Contractor has specific questions regarding coordination of the installation with structural, architectural and site conditions and work between trades, submit same with appropriate shop drawings documenting areas in question with Contractor's proposed installation.
 - 6. Submission and review of coordinated layout shop drawings:
 - a. Prepare reproducible drawings.
 - b. Submit to each trade for review of space allocated to all trades.
 - c. Revise drawings to compensate for review by each trade.
 - d. Review revisions with each trade.
 - e. Submit to Architect for review.
 - f. Review of coordinated layout shop drawings is only for verification that Contractor has performed coordination work as specified herein.
 - (1) Review does not include verification of exact dimensions, clearances, arrangements and/or compliance with codes.
 - 7. Final coordinated layout shop drawings shall show that all trades affected have made

reviews and shall be signed by each trade at completion of coordination.

- a. General Contractor is to assure that each trade has coordinated work with other trades.
- b. Include stamp with labeled space for each trade to sign on each submittal indicating that layout shop drawing has been coordinated.
- c. No layout shop drawing will be reviewed without stamped and signed coordination assurance by General Contractor.
- 8. Coordinated layout shop drawings showing work of all trades are required. Individual trade layout shop drawings will not be accepted.

1.7 SUBMITTALS

A. Coordination Documents: Coordinate shop drawings, diagrams and other specified in various product Sections of the Contract Specifications. Submit coordination drawings and schedules as specified below, prior to submitting shop drawings, product data, and samples.

1.8 GROUND BREAKING

- A. Accommodate a University Groundbreaking Ceremony, to be scheduled prior to the start of construction. Provide and coordinate the following
 - 1. Entry to the site from Campus parking
 - 2. Temporary d.g. or gravel pad covered with color Astroturf or similar walking surface
 - 3. Minimum 20 foot x 40 foot Tent and chairs for 200 participants.
 - 4. Provide a platform with chairs for 10 people and a podium.
 - 5. Have in place, a backhoe as a backdrop and a large pile of dirt for the symbolic groundbreaking.
 - 6. Provide an area for dignitary photographs in front of the backhoe, with project jobsite sign visible in backdrop.
 - 7. Coordinate with the University project manager on placement and staging of all of the above.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 – EXECUTION

3.1 COORDINATION REQUIRED

- A. Coordinate Work specified in Division 13 Special Construction, Division 15 Mechanical and Division 16 - Electrical within each Division, between these Division and with Work specified in other Divisions.
- B. Coordinate progress schedules, including dates for submittals and for delivery of products.
- C. Conduct meetings with suppliers, installers and others concerned with the Work, to establish and maintain coordination of layout, sequencing and completion of various elements of Work.
- D. Conduct meetings with installers and others concerned with the Work, to properly integrate various mechanical and electrical systems, to facilitate construction and to provide proper access and work space for maintenance, renovation and improvement of system components. Include participation

by representatives of University, including maintenance personnel.

- E. Assist in resolution of conflicts by providing technical advice, coordination drawings and three dimensional representations of integrated system components, including computer and physical models as necessary.
- F. At construction progress meetings, report on progress of Work to be adjusted under coordination requirements and any necessary changes in sequencing and scheduling of Work.
- G. Transmit minutes of coordination meetings and reports to University's Representative, Architect, Architect's consultants (as applicable) and to meeting participants.

3.2 COORDINATION DOCUMENTS

- A. Coordination Drawings and Models: Contractor shall prepare coordination drawings and threedimensional models, in computer form and in physical form as necessary, to organize layout and installation of mechanical and electrical products for efficient use of available space, for proper sequence of installation, for integration with building structure, for future maintenance and renovation, and to identify potential conflicts between systems and elements.
- B. System Services: Contractor shall identify on coordination drawings and models all plumbing and electrical power and signal services required for each component of each system.
 - 1. Contractor shall certify that characteristics of services and controls are correct for each component.
 - 2. Certification shall be in written form and signed by Contractor and mechanical and electrical coordinator.
- C. Responsibility and Services Matrix: Contractor shall prepare schedule a matrix identifying elements of mechanical and electrical Work requiring coordination, as specified in each Section in Divisions 1 through 16 of the Contract Specifications.
 - 1. Include identification of parties having responsibilities related to each element of Work and describe what that responsibility shall be.
 - 2. Include required off-site and on-site tests and inspections for various elements of Work.
 - 3. Include identification of administrative activities related to each element of mechanical and electrical Work, such as product data, shop drawings, coordination drawings, samples, mock-ups, test reports for each element of Work.
 - 4. Include identification of elements of Work requiring temporary services.
- D. Maintenance and Disposition of Coordination Documentation: Maintain coordination documents, including models, for duration of the Work, recording all changes. After review of original and revised documents and models by University's Representative and Architect, submit documents and models as part of Project record documents. See Section 01789, Project Record Documents.

3.3 COORDINATION OF SUBMITTALS

A. Submittal Reviews by Mechanical and Electrical Coordinator: In addition to specified review actions by Contractor, specified in Section 01330 - Submittals Procedures, all product data, shop drawings and samples shall be reviewed by the mechanical and electrical coordinator for proper coordination
of various elements of Work, as described in the preceding Article titled "Coordination Documents."

- 1. Include Owner-furnished/Contractor-installed (OFCI) products.
- 2. Include products to be provided (furnished and installed) under separate contracts by University, to the extent that information is provided in the Contract Documents and supplemental instructions from University's Representative.
- 3. Review by Contractor shall be completed prior to submission of product data, shop drawings and samples to Architect for review.
- 4. Indicate review actions by Contractor by signed review stamp and other appropriate notations on submittals.
- 5. Coordinate with other review actions to be taken by Contractor, as specified in Section 01330 Submittals Procedures.
- B. Field Conditions: Contractor shall verify field dimensions and clearances and relationship to available space and anchoring provisions. Report conflicts in writing to the Architect and the University's Representative.
- C. Product Characteristics: Contractor shall:
 - 1. Verify compatibility of equipment and other elements requiring plumbing, HVAC and electrical services and signals with services to be provided.
 - 2. Verify motor voltages and control characteristics.
 - 3. Coordinate controls, interlocks, wiring of pneumatic switches, and relays.
 - 4. Coordinate wiring and control diagrams.
 - 5. Review the effect of changes in one element of the Work of other elements of the Work. Identify conflicts and report conflicts in written and graphic form to the Architect and the University's Representative.
 - 6. Verify information provided in maintenance and operating instructions and coordinate preparation of maintenance and operation data. See Section 01783 Operation and Maintenance Data.

3.4 COORDINATION OF SUBSTITUTIONS AND MODIFICATIONS

- Review of Proposed Substitutions: See Section 01630 Product Substitution Procedures. Contractor shall review Contractor's proposals and requests for substitution prior to submission to Architect.
 - 1. Contractor shall verify compliance with Contract Documents and shall certify compatibility with other elements of the Work, including proper integration with building structure, load limitations, operating and maintenance space and accessibility provisions, and suitability for available building services, including plumbing and electrical power and signal systems.
 - 2. Contractor shall prepare and submit recommendation for action regarding proposals, including identification of related changes in other elements of the Work.

3.5 SYSTEM AND EQUIPMENT START-UP

- A. Observations of System and Equipment Activation and Start-Up: Contractor shall observe activation and start-up of systems and equipment, including all Work specified in Divisions 2 through 17 with connections to utilities, building services and controls.
 - 1. Contractor shall verify that utilities, building services and control systems are properly connected, complete and functional within criteria of manufacturer and criteria indicated in the Contract Documents.
 - 2. Contractor shall verify that activated elements are properly anchored and that operating components operate properly according to the component's intended design.
 - Contractor shall verify that activated elements of the Work are in operable condition according to normal operating characteristics required by the manufacturer and the Contract Documents.
 - 4. Should adjustments be necessary to activated elements, Contractor shall advise the Architect and University's Representative of necessary actions and shall observe that proper actions are performed to achieve required operating characteristics.
- B. Observations of System and Equipment Demonstrations: Contractor shall observe performance demonstrations including equipment demonstrations to Architect and University's Representative. Record times and additional information required for operation and maintenance manuals.
- C. Documentation of Observations of Activation, Start-Up, Adjustment and Demonstration: Contractor shall keep written record of activation, start-up, operational tests and inspections and necessary adjustments and re-tests and re-inspections.
 - 1. Documentation shall include record of time and date of activation, start-up, operational tests and inspections and shall include measured results of tests and inspections.
 - 2. Documentation shall be submitted to University's Representative and Architect.

3.6 INSPECTION AND ACCEPTANCE OF EQUIPMENT

- A. Contract Completion Review:
 - 1. Prior to Contract Completion review, Contractor shall verify that each component and system has been properly adjusted, cleaned, lubricated, inspected and tested, and is ready operation and use.

SECTION 01312

PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 REQUIREMENTS INCLUDED

- A. Preconstruction meeting.
- B. Construction progress meetings.
- C. Pre-installation conferences.

1.3 RELATED REQUIREMENTS

- A. Section 01450 Quality Control: General requirements for construction quality, to be reviewed at construction progress meetings.
- B. Section 01321 Construction Progress Schedules: General requirements for construction progress schedules, to be reviewed at construction progress meetings.
- C. Section 01322 Construction Progress Reports: General requirements for construction progress reports, to be reviewed at construction progress meetings.
- D. Section 01330 Submittals Procedures: Status of submittals to be reviewed at construction progress meetings.
- E. Section 01770 Contract Closeout Procedures: Contract closeout meeting.

1.4 PRECONSTRUCTION MEETING

- A. Preconstruction Meeting: University's Representative will administer a preconstruction meeting immediately prior to Contractor mobilization onto the project site.
 - 1. Representatives of the Trustees, the Contractor, Architect, and Architect's Consultants, and campus representatives, as appropriate, will attend.
 - 2. Contractor and major subcontractors, as appropriate, shall attend.
- B. Schedule: Schedule preconstruction meeting within five days of construction start date established in the Notice to Proceed.
- C. Location: Preconstruction meeting will be held at a location as directed by the University's Representative.

- D. Agenda: Preconstruction meeting shall cover the following topics as a minimum.
 - 1. Special Project Procedures: Site access restrictions, if any, and requirements to avoid disruption of operations at adjoining facilities. Present University's requirements for use of premises.
 - 2. Designation of Key Personnel: Contractor shall designate key personnel and provide a name and address list that includes the following.
 - a. Contractor: Project Manager and Superintendent.
 - b. Major subcontractors: Principal/Project Manager and Superintendent.
 - c. Major materials suppliers: Contact person.
 - 3. Subcontractors List: Distribute and discuss list of subcontractors and suppliers.
 - 4. Coordination: Review requirements for Contractor's coordination of Work. Review sequence and schedule for work being performed for University under separate contracts. Discuss coordination of construction to minimize impacts on continuing Campus operations.
 - 5. Project Communication Procedures: Review requirements and administrative requirements for written and oral communications.
 - Construction Schedule: Distribute and discuss initial construction schedule and critical work sequencing of major elements of Work, including coordination of Owner-Furnished/Contractor-Installed (OFCI) products and work under separate contracts by serving utility agencies and companies and University.
 - 7. Campus and Site Security: Review requirements for Contractor to develop and implement site security.
 - 8. Safety Program: Review requirements for Contractor to develop and implement safety program in compliance with Contract General Conditions.
 - 9. Site Access by University's Representative and Architect: Review requirements and administrative procedures Contractor may wish to institute for identification and reporting purposes.
 - 10. Permits and Fees: Review Contract requirements and review schedule and process for obtaining permits and paying fees, including utility charges.
 - 11. Project Layout: Review requirements for laying out of Work, including surveying requirements.
 - 12. Construction Facilities: Designate storage and staging areas, construction office areas and parking areas and review site access requirements.
 - Temporary Utilities: Requirements for establishing and paying for temporary water, power, lighting and other utility services during construction, including metering and allowances. Refer to Section 01510 - Temporary Utilities.
 - 14. Construction Progress Schedules: Review requirements for preparation and updating of construction progress and submittals schedules.
 - 15. Payment Procedures: Review requirements for preparation and submission of applications for progress payments and for final payment.

- 16. Change Procedures: Review requirements and administrative procedures for Change Orders, Field Instructions and Contractor's Requests for Interpretation (RFI).
- 17. Submittals Administration: Review administrative procedures for shop drawings, product data and samples submittals and review of preliminary Submittals Schedule.
- 18. Materials and Equipment: Review substitution or equal product requirements; review schedule for major equipment purchases and deliveries; review materials and equipment to be provided by University (OFCI products).
- 19. Testing and Inspection: Review tests and inspections to be performed by the following.
 - a. Independent testing and inspection agency.
 - b. Manufacturers and installers.
 - c. Serving utilities and public agencies.
 - d. Authorities having jurisdiction.
- 20. Operation and Maintenance Data: Format and content of operation and maintenance manuals. Refer to Section 01783 - Operation and Maintenance Data.
- Instruction of University's Personnel: Review requirements and scheduling of instruction of personnel specified in Section 01820 - Demonstration and Training and in various Sections in Divisions 2 through 17 of the Specifications.
- 22. Starting and Adjusting Procedures: Review requirements of starting and adjusting operating components. Refer to Section 01750 Starting and Adjusting Procedures.
- 23. Project Record Documents: Review requirements and procedures for preparing, reviewing and submitting project record drawings and specifications.
- 24. Construction Cleaning: Review requirements for progress and final cleaning specified in Section 01740 Cleaning Requirements.
- 25. Contract Closeout: Review requirements specified in Section 01770 Contract Closeout Procedures, including procedures for filing of Notice of Completion, final payment and submittals.
- 26. Preparation of record documents.
- 27. Owner and contractor's use of the premises.
- 28. Responsibility for temporary facilities and controls, including mark-out.
- 29. Review of working hours.
- 30. Review of blasting, rock removal, rock crushing, and stock piling.
- 31. CEQA compliance requirements.
- 32. Campus police functions.

1.5 CONSTRUCTION PROGRESS MEETINGS

- A. Construction Progress Meetings: Meetings will be held to review progress and quality of construction. The essence of the discussion of each meeting shall be entered into the written record (minutes) of the meeting by the Architect or the University Representative designee.
- B. Schedule: Construction progress meetings shall be periodically scheduled throughout progress of the Work. Frequency shall be as determined necessary for progress of Work. Generally, it is intended that construction progress meetings be held at weekly intervals.
- C. Administration: Architect shall make physical arrangements for meetings. Architect shall prepare agenda with copies for participants, preside at meetings, record minutes and distribute copies within two working days to University's Representative, Contractor, participants and those affected by decisions made at meetings. Each discussion item at construction progress meetings shall be numerically identified and carried through subsequent meeting minutes until resolved.
- D. Attendance: Contractor's project manager and jobsite superintendent shall attend each meeting. Contractor's subcontractors and suppliers may attend as appropriate to subject under discussion. University's Representative will attend each meeting. Architect's consultants will also attend, as appropriate to agenda topics for each meeting and as provided in University-Architect Agreement.
- E. Suggested Agenda for Each Construction Progress Meeting:
 - 1. Meeting Minutes: Review and correct, if necessary, minutes of previous meeting.
 - a. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.
 - b. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.
 - c. Challenge to minutes shall be settled as priority portions of "old business" at the next regularly scheduled meeting.
 - 2. Progress of the Work: Since last meeting and proposed progress.
 - a. Identify potential problems which might impede progress.
 - b. Develop corrective measures and procedures, including but not necessarily limited to additional man-loading to regain planned schedule.
 - c. Review three-week "look ahead" construction schedule, including identification of conflicts and delays.
 - 3. Ordering Status: Review status of long-lead time equipment and materials delivery affecting construction progress.
 - 4. RFI Status: Review status of Requests for Interpretation (RFI) status.
 - 5. Submittals Status: Review shop drawings, product data and samples submission and review status.
 - 6. Contract Modifications: Pending Change Orders and Field Orders. Review status of proposed substitutions.
 - 7. Old Business: Active discussion topics carried over from previous meetings.
 - 8. New Business: New topics of discussion affecting construction progress and quality.

- 9. Quality Control: Review maintenance of quality standards and identification of non-conforming Work, including proposed remedial measures to be taken by Contractor.
- 10. Project Record Documents: Status of project record drawings and specifications.
- 11. Environmental and Safety Issues.
- 12. Other items affecting progress and quality of the Work.
- F. Meeting Time and Location: As mutually agreed by the Architect, the Contractor, and the University's Representative at on-site location.
- G. Special Meetings: As necessary, the Architect, the Contractor, or the University's Representative may convene special meetings to discuss specific construction issues in detail and to plan specific activities.

1.6 SUBCONTRACTOR PROGRESS MEETINGS

- A. Subcontractor coordination meetings: Contractor shall conduct Project coordination meetings weekly. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and reinstallation conferences.
- B. Schedule Updating: Revised Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.
- C. Reporting: Record meeting results and distribute copies to the Construction Manager, Trustees, Architect and Construction Administrator, plus everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.7 PRE-INSTALLATION CONFERENCES

- A. Pre-Installation Conferences: When specified in individual product specification Sections, convene a pre-installation conference prior to commencing Work specified in individual product Sections.
 - 1. Require attendance by representatives of firms whose activities directly affect or are affected by Work specified in the Section.
 - 2. Review conditions of installation, preparation and installation procedures and coordination with related Work and work under separate contracts.

1.8 CONTRACT COMPLETION MEETING

A. Contract Closeout Meeting: As specified in Section 01770 - Contract Closeout Procedures.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

Not applicable to this Section.

SECTION 01320 ELECTRONIC PROJECT MANAGEMENT SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This Section is in addition to the Contract General Conditions.
- B. The Contractor shall be required to use the University's Electronic Project Management (EPM) system, Prolog Website and/or Prolog Manager, by Meridian Project Systems for electronic construction management document control and communications between the University, Architect of Record, other project-related consultants, and Contractor. The system will be maintained and owned by the University but operated collaboratively by the Project Team. The system will be web-based.
- C. The EPM system will contain information the following information available to the contractor and project team:
 - 1. Submittal Information and Logs
 - 2. Requests for Information and Logs
 - 3. Inspection Requests / Reports
 - 4. Non-Compliance Inspection Reports
 - 5. Project Photographs
 - 6. Project Meeting Minutes
 - 7. Project FTP Site
 - 8. Electronic Drawings, Sketches, ASIs
 - 9. Superintendent Daily reports (within 24 hours)
 - 10. Change request bulletins, ASI, etc.
 - 11. Change Orders, Field Instructions and other change order documentation.
 - 12. Other Documentation as determined by the University's Representative.
- D. All Request For Information (RFIs and attachments) and Inspection Requests, shall be submitted by the Contractor to the University electronically, via Prolog Website.
- E. The University will **NOT** accept faxed and/or computer generated documentation and/or hand written documentation of RFIs, RFI attachments, and/or Inspection Requests.
 - 1. The Contractor shall be solely responsible for data entry via EPM Website for the generation of RFIs.
 - The contractor shall be solely responsible for the scanning of sketches / drawings as necessary for the electronic submittal and attachment of necessary information related to RFIs.

- 3. Contractor shall supply field personnel all necessary computer equipment necessary to enter RFIs electronically, including scanning capability.
- F. Submittals shall be submitted via hard copy per Section 01300 Submittals and entered simultaneously into the EPM system for tracking purposes.

1.02 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall have sufficient computer(s) with capabilities with internet capabilities and a Windows XP (minimum) operating system to access the system at their on site and off site project offices. At the pre-construction meeting, the Contractor shall provide to the University's Representative the email addresses of all Contractor personnel that the Contractor chooses to have access to the EPM system and information. At a minimum, this will include the Contractor's Project Manager and Superintendent. These personnel shall have sufficient computer skills required to access the Internet, log on to the EPM system, and utilize the system.
- B. Contractor and subcontractors, at their expense (session is no cost), shall attend a ½ -day training session at California State University, San Marcos, in order to obtain necessary set-up instructions and training. All direct costs associated with initial set-up of the Project Management Software will be the responsibility of California State University, San Marcos. All costs associated with technical support provided by the Electronic Project Management Consultant shall be the responsibility of California State University San Marcos. Contractor shall provide _____ (_) user license of a cost of \$_____0 (payable to the University upon invoice) for use on the campus provided EPM system. These licenses shall remain the property of the campus at the completion of the project.
- C. The Contractor's bid shall include costs for providing all necessary hardware and software to use this system.

1.03 OFFICIAL RECORDS

A. The documentation and records maintained on the EPM system will be the "Official Records" for the project. This documentation shall be the records for the adjudication of any and all disputes. At the conclusion of the project all records can be made available via Adobe "pdf" and/or EPM system files for import/export.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

SECTION 01322

CONSTRUCTION PROGRESS REPORTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Construction progress reports.

1.3 RELATED SECTIONS

- A. Section 01312 Project Meetings: Review of construction progress and submittals status at Project meetings.
- B. Section XXXX Construction Progress Schedules: Construction Progress Schedule and Submittals Schedule. As defined in the General Conditions and the Supplementary General Conditions.
- C. Section 01770 Contract Closeout Procedures: Notice by Contractor of progress of the Work sufficient for Contract Completion review and Acceptance by University..

1.4 CONSTRUCTION PROGRESS REPORTS

- A. Daily Log: Contractor shall maintain a written daily log at the job site in the Electronic Project Management system, within 24 hours and include the following information as a minimum:
 - 1. Date.
 - 2. Weather conditions.
 - 3. Subcontractors and trades performing Work under the Agreement on the Site, and number of workers each, equipment and number of hours worked by each worker.
 - 4. Others on the Site performing work for University under separate contracts.
 - 5. List of visitors to site, giving name, company or agency affiliation and telephone number.
 - 6. Descriptions of situations and circumstances which could delay normal progress of Work or which could be basis of claim for change in Contract Time or Contract Sum.
 - 7. Changes to Work and who authorized changes.
 - 8. Comments, as Contractor determines are appropriate for Project record.
 - 9. Inspection requests, inspections and results of inspections.
- B. Submission of Logs: Submit one copy of daily logs to University's Representative and Architect at

The California State University San Marcos Project Name here Project No. SM – XXXX Date

weekly intervals, for review at Construction Progress Meetings.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

Not applicable to this Section.

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Administrative requirements for shop drawings, product data and samples submittals.
- B. Administrative requirements for submittals reporting results of tests and inspections, during field Work.
- C. Contractor's review of submittals.
- D. Architect's review of submittals.
- E. Product data submittals.
- F. Shop drawing submittals.
- G. Sample submittals.
- H. Reports of results of tests and inspections.
- I. Operation and Maintenance Data submittals
- J. Miscellaneous submittals

1.3 RELATED SECTIONS

- A. Section XXXXX Construction Progress Schedules: Submittals Schedule.
- B. Section 01450 Quality Control: Test and inspection reports.
- C. Section 01455 Mock-ups.
- D. Section 01770 Contract Closeout Procedures: Submittals for occupancy, Acceptance and Final Payment.
- E. Section 01783 Operation and Maintenance Data: Requirements for preparation and submission of operation and maintenance data.

1.4 DEFINITIONS

A. Shop Drawings, Product Data and Samples: Instruments prepared and submitted by Contractor, for Contractor's benefit, to communicate to Architect the Contractor's understanding of the design intent, for review and comment by Architect on the conformance of the submitted information to the general

intent of the design. Shop drawings, product data and samples are not Contract Documents.

- B. Shop Drawings: Drawings, diagrams, schedules and illustrations, with related notes, specially prepared for the Work of the Contract, to illustrate a portion of the Work.
- C. Product Data: Standard published information ("catalog cuts") and specially prepared data for the Work of the Contract, including standard illustrations, schedules, brochures, diagrams, performance charts, instructions and other information to illustrate a portion of the Work.
- D. Samples: Physical examples that demonstrate the materials, finishes, features, workmanship and other characteristics of a portion of the Work. Accepted samples shall serve as quality basis for evaluating the Work.
- E. Other Submittals: Technical data, test reports, calculations, surveys, certifications, special warranties and guarantees, operation and maintenance data, extra stock and other submitted information and products shall also be not be considered to Contract Documents but shall be information from Contractor to Architect to illustrate a portion of the Work for confirmation of understanding of design intent.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Administrative Requirements for Submittals: Submittals shall be made in accordance with requirements specified herein and in Division 2 through 17 Sections of the Specifications. See also Article 5 of the Contract General Conditions for additional requirements especially those regarding requests for alternatives or equals and for substitutions.
- B. Submittal Process: All submittals must be submitted through the Electronic Project Management system as described in Section 01320.
- C. Electronic copies of CAD drawings of the contract drawings will not be provided by the Architect for the contractor's use in preparing submittals.
- D. Contractor Coordination of Submittals: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect will return without action submittals requiring coordination with other submittals until related submittals are coordinated.
- E. Submittals List: Contractor shall prepare and submit a Submittals List for review and approval by University's Representative and Architect. Submittals List shall identify all specified submittals to be made and shall serve as checklist for submittals.
 - 1. Format shall be suitable for Project and shall be subject to acceptance by University's Representative and the Architect. Comply with directions by University's Representative and the Architect for scope and format of Submittals List.
 - 2. Submittals list shall include the following submittal types and headings:

- SD = Shop Drawings are required
- PD = Product Data required
- SA = Samples required
- CO = Color samples required
- SS = Site Sample installations are required
- LM = List of Materials
- RD = Record Drawings required
- CE = Certificates are required
- PR = Manufacturer's instructions or specifications required
- OM = Operation and Maintenance manuals are required
- EQ = Maintenance materials/equipment are required
- WA = Warranties and/or guarantees are required
- LR = Laboratory Reports are required
- FT = Factory Test reports are required
- ST = Site Test reports required
- RP = Submittal to the Architect for record purposes only and not for review or approval
- O = Other submittal requirements as specified in Section
- 3. Sample Table:

Section	<u>SD</u>	<u>PD</u>	<u>SA</u>	<u>CO</u>	<u>SS</u>	<u>LM</u>	<u>RD</u>	<u>CE</u>	<u>PR</u>	<u>OM</u>	<u>EQ</u>	$\frac{W}{\Delta}$	<u>LR</u>	<u>F</u> т	<u>ST</u>	<u>RP</u>	<u>0</u>
05120	х					х						<u> </u>		<u> </u>			
09250		х			х	х		х					х		х		
10810		х	х														

- F. Transmission of Submittals: Package each submittal appropriately for shipping and handling. Transmit all submittals from Contractor to Architect, unless otherwise directed, using a transmittal form. Submittals received from sources other than the Contractor will be returned without action. Include all information specified below for identification of submittal and for monitoring of review process.
 - 1. Architect will provide example Letter of Transmittal, if requested.
 - 2. Architect will forward one copy of submittal to University's Representative for review.
- G. Timing of Submittals: Make submittals sufficiently in advance of construction activities to allow shipping, handling and review by the Architect and Architect's consultants. Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for re-submittals.
 - 1. See Contract General Conditions and Supplementary General Conditions for additional requirements.
 - 2. If an intermediate submittal is necessary, process the same as the initial submittal.
 - 3. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.
- H. Submittals Identification:
 - 1. Provide a space approximately four-inches by five-inches on the label or beside the title block on

Shop Drawings to record the Contractor's review and approval markings and the action taken. Include the following information on the label for processing and recording action taken:

- a. Project name and Trustees project number
- b. Submission date
- c. Name and address of Architect
- d. Name and address of Contractor
- e. Name and address of subcontractor
- f. Name and address of supplier
- g. Name of manufacturer
- h. Number and title of appropriate Specification Section
- i. Drawing number and detail references, as appropriate.
- 2. Identify each element on submittal by reference to Drawing sheet number, detail, schedule, room number, assembly or equipment number, Specifications article and paragraph, and other pertinent information to clearly correlate submittal with Contract Drawings. On the submittal transmittal form or separate sheet record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information submitted complies with requirements of the Contract Document.
- 3. Identify each submittal by Specification Section number followed by a number indicating sequential submittal for that Section. Re-submittals shall use same number as original submittal, followed by a letter indicating sequential re-submittal. For example:
 - 09250-1First submittal for Section 09250 Gypsum Board.09250-2Second submittal for Section 09250 Gypsum Board.09250-2ARe-submittal of second submittal for Section 09250 Gypsum Board.09250-2BSecond re-submittal of second submittal for Section 09250 Gypsum Board.
- 4. Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
- I. Grouping of Submittals: Unless otherwise specifically permitted by the Architect, make all submittals in groups containing all associated items. The Architect may reject partial submittals as incomplete or hold them until related submittals are made.
- J. Unsolicited Submittals: Unsolicited submittals may be returned un-reviewed.
- K. Record Submittals: When record submittals are specified, submit three copies or sets only. Record submittals will not be reviewed but will be retained for historical and maintenance purposes.
- L. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.
- M. Additional copies: As requested by the University representative, submit one copy of the submittal to a concurrent reviewer in addition to the specified number of copies to the Architect.
- N. Submittal Log: A log for recording information about submittal status and responses will be provided in the Electronic Project management system. Maintain and continuously update the submittal log in the EPM. Make corrections to the log as directed by the University representative.

1.6 SUBMITTALS SCHEDULE

A. Submittals Schedule: Comply with requirements in the General Conditions and Supplementary General Conditions for a list of submittals and time requirements for scheduled performance of related construction activities.

1.7 CONTRACTOR'S REVIEW OF SUBMITTALS

- A. Contractor's Review of Submittals: Prior to submission to Architect for review, Contractor shall review each submittal for completeness and conformance to specified requirements. Contractor shall stamp each submittal with a review action stamp and sign each copy of submittal. Submittals without stamp and signature will not be reviewed and will be returned. Contractor's submittal action stamp shall certify the following actions by Contractor:
 - 1. Field measurements have been determined and verified.
 - 2. Conformance with requirements of Contract Drawings and Specifications is confirmed.
 - 3. Catalog numbers and similar data are correct.
 - 4. Work being performed by various subcontractors and trades is coordinated.
 - 5. Field construction criteria have been verified, including confirmation that information submitted has been coordinated with the work being performed by others for University and actual site conditions.
 - 6. All deviations from requirements of Drawings and Specifications have been identified and noted.
- B. Changes in Work: Changes in the Work shall not be authorized by submittals review actions. No review action, implicit or explicit, shall be interpreted to authorized changes in the Work. Changes shall only be authorized by separate written direction from the University Representative, in accordance with the Contract General Conditions.

1.8 REVIEW OF SUBMITTALS BY UNIVERSITY'S REPRESENTATIVE AND ARCHITECT

- A. Review of Submittals by University's Representative and Architect: Submittals shall be a communication aid between Contractor and Architect by which interpretation of Contract Documents requirements may be confirmed in advance of construction.
 - 1. Reviews by University's Representative, Architect and Architect's consultants shall be only for general conformance with the design concept of the Project and general compliance with the information given in the Drawings and Specifications.
 - 2. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.
- B. Review Action: Architect will stamp each submittal with a uniform, self-explanatory action stamp. Stamp will be appropriately marked, as follows, to indicate the action taken:
 - 1. Final Unrestricted Release: Where submittals are marked "Approved," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

- 2. Final-But-Restricted Release: When submittals are marked "Approved as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
- 3. Returned for Re-submittal: When submittal is marked "Not Approved, Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
 - b. Note: Any work performed prior to receiving a fully approved submittal shall be done at the Contractor's risk and shall be subject to being replaced if Contract requirements are not met.
- C. Contract Requirements:
 - 1. Review actions by Architect and Architect's consultants shall not relieve the Contractor from compliance with requirements of the Contract Drawings and Specifications.
 - 2. No review action, implicit or explicit, shall be interpreted to authorize changes in the Work. Changes shall only be authorized by separate written Change Order or Field Instruction, in accordance with the Contract General Conditions.

1.9 PRODUCT DATA SUBMITTALS

- A. Product Data: Catalog cuts, photographs, illustrations, standard details, standard schedules, performance charts, material characteristics, color and pattern charts, test data, roughing-in diagrams and templates, standard wiring diagrams and performance curves and listings by Code authorities and nationally-recognized testing and inspection services. Where product data must be specially prepared because standard printed data is not suitable for use, submit according to requirements for shop drawings, specified below.
- B. Modifications to Standard Product Data: Modify manufacturer's standard catalog data to indicate precise conditions of the Project.
 - 1. Provide space for review action stamps and, if required by authorities having jurisdiction, license seal of Architect and Architect's design consultant, if applicable.
 - 2. Mark each copy to show applicable choices and options. Where printed product data includes information on several products, some of which are not required, mark copies to highlight applicable information.
 - 3. Include the following information:

Manufacturer's printed recommendations, Compliance with recognized trade association standards, Compliance with recognized testing agency standards, Application of testing agency labels and seals, Notation of dimensions verified by field measurement, Notation of coordination requirements.

- 4. Do not submit product data until compliance with requirements of the Contract Documents has been confirmed.
- 5. Proceed with installation only using reviewed copy of product data. Do not permit use of unmarked copies of product data in connection with construction.
- C. Copies: Submit 8 copies, minimum, of original catalog pages or xerographic copies only, with applicable data highlighted and cross-referenced to Drawings and Specifications requirements. Wetprocess and thermal paper copies will not be acceptable. Distribution of product data submittals shall be:
 - 1. Architect: One copy
 - 2. Architect's consultant: One copy
 - 3. University's Representative (pre-review): One copy
 - 4. University's Representative (post-review): One copy
 - 5. Project Inspector: One copy
 - 6. Contractor: Three copies.

1.10 SHOP DRAWINGS SUBMITTALS

- A. Shop Drawings: Drawings, diagrams, schedules and other graphic depictions to illustrate fabrication and installation of a portion of the Work. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
 - 1. Identification of products and materials included
 - 2. Compliance with referenced standards
 - 3. Notation of coordination requirements
 - 4. Dimensions
 - 5. Notation of dimensions established by field measurement.
- B. Coordination: Show all field dimensions and relationships to adjacent or critical features of Work.
- C. Preparation of Shop Drawings: Prepare and submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
 - 1. Provide space for review action stamps and, if required by governing authorities having jurisdiction, license seal of Architect and Architect's design consultant, if applicable.
 - 2. Prepare shop drawings on minimum sheet size of 17-inches by 22-inches, or smaller if a multiple of 8-1/2 inches by 11-inches. Maximum size shall be 30-inches by 42-inches.

- 3. Except as noted in product Specifications Sections, submit one correctable translucent reproducible print and six blue- or black-line prints of shop drawings. The reproducible and one print will be returned after review.
- 4. Do not use Shop Drawings without an appropriate final review stamp indicating action taken in connection with construction.
- D. Distribution of Reviewed Shop Drawings: Distribution of reviewed shop drawings will be by Architect.
 - 1. Architect: One copy (from reviewed reproducible)
 - 2. Architect's consultant: One copy (from reviewed reproducible)
 - 3. University's Representative: One copy (pre-review print) and one copy (from reviewed reproducible)
 - 4. Project Inspector: One copy (from reviewed reproducible)
 - 5. Contractor: One copy (reviewed reproducible) and one copy (opaque print).

1.11 SAMPLES SUBMITTALS

- A. Samples: Full-size, fully-fabricated samples, cured and finished as specified and physically identical with the material or product proposed. Samples shall include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
 - 1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to include the following:

Generic description of the Sample Sample source Product name or name of manufacturer Compliance with recognized standards Availability and delivery time.

- 2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
- 3. Submit actual samples. Photographic or printed reproductions will not be accepted.
- 4. Field samples specified in individual Sections are special types of samples. Field samples shall be full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be evaluated.
- B. Preliminary or Selection Submittals: Where samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit full set of choices for the specified material or product.
 - 1. Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.

- 1. Maintain sets of samples, as returned, at the Project site, for quality comparisons throughout the course of construction.
- 2. Unless otherwise noted, full-size and complete samples will be returned and may be incorporated into field mock-ups. Samples may be incorporated into the Work (completed construction) only with written approval of the Architect.
- 3. Other samples shall be produced and mounted on cardstock in 8-1/2" by 11" format, three-hole punched and suitable for inclusion in product sample binders. Contractor shall provide binders as directed.
- 4. Contractor shall prepare and distribute additional samples to subcontractors, manufacturers, fabricators, suppliers, installers, and others as necessary for performance of the Work.
- D. Color Samples: Architect will review and select colors for the Project, only after all colors are received, so that colors may be properly coordinated.
- E. Review of Field Samples: Review by Architect of field samples will be made for the following products if not otherwise required and if requested by Contractor.

THE FOLLOWING ARE EXAMPLES. EDIT TO SUIT ACTUAL PRODUCTS USED FOR PROJECT.

- 1. Casework.
- 2. Portland cement concrete paving: Trowel finish, imprinted texture, colors, abrasive blasting, exposed aggregate and acid washing.
- 3. Exterior plaster finish color and texture.
- 4. Gypsum board textures and finishes.

1.12 MANUFACTURER'S INSTRUCTIONS

- A. Manufacturer's Instructions: Submit manufacturer's instructions for preparation, mixing, assembly, handling, application and installation of products, as applicable and as specified in product Sections of the Specifications.
 - 1. Include applicable ICBO ES Evaluation Reports. Evaluation Reports shall be current and shall be annotated for applicable products.
 - 2. Include applicable Material Safety Data Sheets, for Project record only.
 - 3. Include written recommendations, as applicable, from manufacturer for Project conditions.
- B. Copies: Submit five copies minimum. Distribution will be:

NOT FOR USE WITHOUT EDITING

- 1. University's Representative: One copy
- 2. Architect: One copy
- 3. Architect's consultant: One copy
- 4. Project Inspector: One copy
- 5. Contractor: As necessary, retained by Contractor.
- 6. Reviews by Architect and University's Representative: Manufacturer's instructions shall be for information and will not be reviewed by Architect or University's Representative.

1.13 REPORTS OF RESULTS OF INSPECTIONS AND TESTS

- A. Reports of Results of Inspections and Tests: Submit technical data, test reports, calculations, surveys, and certifications based on field tests and inspections by independent inspection and testing agency and by authorities having jurisdiction.
 - 1. Reports of results of inspections and tests shall not be considered Contract Documents.
 - 2. Refer to Section 01450 Quality Control for additional requirements.

1.14 OPERATION AND MAINTENANCE DATA SUBMITTALS

A. Operation and Maintenance Data Submittals: Refer to requirements specified in Section 01783 -Operation and Maintenance Data. Include operation and maintenance data submittals in Submittals Schedule. Refer to Section XXXXX - Construction Progress Schedules.

1.5 MISCELLANEOUS SUBMITTALS

- A. Schedule of Construction Values: Comply with requirements in the General Conditions and Supplementary General Conditions for a list of submittals and time requirements
- B. Pay Applications: Comply with requirements in the General Conditions and Supplementary General Conditions for a list of submittals and time requirements. Draft Pay applications are due the 20th of each month for progress payments.
- C. Subcontractor List: Provide an updated subcontractor listing on the form provided by the University representative as requested by the University representative.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

Not applicable to this Section.

SECTION 01340

REQUESTS FOR INTERPRETATION (RFI)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Procedures for submitting requests for interpretation (RFI).
- B. Limitations on use of RFI to obtain interpretation and clarification.

1.3 RELATED SECTIONS

- A. Section 01310 Coordination: Requirements for organizing and coordinating the Work.
- B. Section 01330 Submittals Procedures: Restriction on use of submittals for changes in materials, products, equipment and systems.
- C. Section 01630 Product Substitution Procedures: Procedures for requesting substitutions of materials, products, equipment and systems.

1.4 **DEFINITIONS**

A. Request for Interpretation: A document submitted by the Contractor requesting clarification of a portion of the Contract Documents, hereinafter referred to as an RFI.

1.5 CONTRACTOR'S REQUESTS FOR INTERPRETATION (RFIs)

- A. Contractor's Requests for Interpretation (RFIs): Should Contractor be unable to determine from the Contract Documents the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of Work is described differently at more than one place in the Contract Documents; the Contractor shall request that the Architect make an interpretation of the requirements of the Contract Documents to resolve such matters. Contractor shall comply with procedures specified herein to make Requests for Interpretation (RFIs).
- B. Submission of RFIs: RFIs shall be prepared and submitted on a form provided in the Electronic Project Management system.
 - Requests for interpretation or clarification not submitted by means of the EPM will not be reviewed or logged. The Construction Manager or Architect will only review requests for interpretation or clarification received directly in the required written form submitted by means of the EPM system.
 - 2. Forms shall be completely if prepared by hand will not be reviewed.

- 3. Each RFI shall be given a discrete, consecutive number.
- 4. Each page of the RFI and each attachments to the RFI shall bear the University's project name, project number, date, RFI number and a descriptive title.
- 5. Contractor shall sign all RFIs attesting to good faith effort to determine from the Contract Documents the information requested for interpretation. Frivolous RFIs shall be subject to reimbursement from Contractor to University for fees charged by Architect, Architect's consultants and other design professionals engaged by the University.
- C. Subcontractor-Initiated and Supplier-Initiated RFIs: RFIs from subcontractors and material suppliers shall be submitted through, be reviewed by and be attached to an RFI prepared, signed and submitted by Contractor. RFIs submitted directly by subcontractors or material suppliers will be returned unanswered to the Contractor.
 - 1. Contractor shall review all subcontractor- and supplier-initiated RFIs and take actions to resolve issues of coordination, sequencing and layout of the Work.
 - 2. RFIs submitted to request clarification of issues related to means, methods, techniques and sequences of construction or for establishing trade jurisdictions and scopes of subcontracts will be returned without interpretation. Such issues are solely the Contractor's responsibility.
 - 3. Contractor shall be responsible for delays resulting from the necessity to resubmit an RFI due to insufficient or incorrect information presented in the RFI.
- D. Requested Information: Contractor shall carefully study the Contract Documents, in particular, Article 5 of the Contract General Conditions, to ensure that information sufficient for interpretation of requirements of the Contract Documents is not included. RFIs that request interpretation of requirements clearly indicated in the Contract Documents will be returned without interpretation.
 - In all cases in which RFIs are issued to request clarification of issues related to means, methods, techniques and sequences of construction, for example, pipe and duct routing, clearances, specific locations of Work shown diagrammatically, apparent interferences and similar items, the Contractor shall furnish all information required for the Architect or University's Representative to analyze and/or understand the circumstances causing the RFI and prepare a clarification or direction as to how the Contractor shall proceed.
 - 2. If information included with this type RFI by the Contractor is insufficient, the RFI will be returned unanswered.
- E. Unacceptable Uses for RFIs: RFIs shall not be used to request the following:
 - 1. Approval of submittals (use procedure specified in Section 01330 Submittals Procedures)
 - 2. Approval of substitutions (refer to Section 01630 Product Substitution Procedures)
 - 3. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Contract General Conditions, as discussed in detail during pre-construction meeting)
 - 4. Different methods of performing Work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Contract General Conditions).
- F. Disputed Requirements: In the event the Contractor believes that a clarification by the University's

Representative results in additional cost or time, Contractor shall comply with Article 5 of the Contract General Conditions.

- G. RFI Log: A log for recording information about RFI status and responses will be provided in the EPM system. Contractor shall maintain and continuously update the ARFI log in the EPM. Make corrections in the log as directed by the University Representative.
- H. Review Time: The amount of time necessary for and appropriate review and response to a RFI will vary. Architect will be allowed as a minimum to return RFIs to Contractor and University's Representative within fourteen (14) calendar days of receipt. RFIs received after 12:00 noon shall be considered received on the next regular working day for the purpose of establishing the start of the response period. Contractor will be notified in writing if responses will take more than fourteen (14) calendar days.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

SECTION 01350

SPECIAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- 1. Environmental protection procedures
- 2. Smoke/odor control procedures
- 3. Noise control procedures
- 4. Dust and air pollution control procedures
- 5. Hazardous materials procedures
- 6. Welding and burning mitigation procedures
- 7. Erosion and sediment control procedures (Storm Water Pollution Protection Plan)
- 8. Disposal operations procedures
- 9. Cultural resources procedures
- 10. Alteration project procedures.

1.3 RELATED SECTIONS

- A. Section 01732 Cutting and Patching: General requirements for procedures and limitations for cutting and patching the work.
- B. Section 01351 Hazardous Materials Procedures. General requirements for procedures and limitations for handling hazardous materials.

1.4 ENVIRONMENTAL PROTECTION PROCEDURES

- A. Environmental Protection Procedures, General: Requirements specified in this Section are in addition to those of Article 4.03 of the Contract General Conditions.
 - 1. During the progress of the work, keep the premises occupied in a neat and clean condition and protect the environment both on site and off site, throughout and upon completion of the construction project.

- 2. In coordination with the Campus, develop an Environmental Protection Plan in detail and submit to University's Representative for approval within 30 calendar days from the date of commencement specified in the Notice to Proceed. Distribute approved plan to all employees and to all subcontractors and their employees. Environmental Protection Plan shall include, but not be limited to, the following items:
 - a. Copies of required permits
 - b. Proposed sanitary landfill site
 - c. Other proposed disposal sites
 - d. Noise Control
 - e. Dust Control
 - f. Erosion and Sediment Control
 - g. Copies of any agreements with public or private landowners regarding equipment, materials storage, borrow sites, fill sites, or disposal sites. Such agreements made by Contractor shall be invalid if their execution causes violation of local or regional grading or land use regulations.
- B. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result.
 - 1. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.
 - 2. Comply with noise control requirements specified below.
- C. Construction Operations: All construction operations shall comply with all applicable Federal, State and local Codes, ordinances, statutes and regulations pertaining to water, air, solid waste and noise pollution. It shall be Contractor's responsibility to identify and determine necessary measures to be taken to comply with such Codes, ordinances, statutes and regulations.
- D. Definitions of Contaminants:
 - 1. Sediment: Soil and other debris that have been eroded and transported by runoff water
 - 2. Solid waste: Rubbish, debris, garbage and other discarded solid materials resulting from construction activities, including a variety of combustible and non-combustible wastes, such as ashes, waste materials that result from construction or maintenance and repair work, leaves and tree trimmings
 - 3. Chemical waste: Includes petroleum products, bituminous materials, salts, acids, alkalis, herbicides, pesticides, disinfectants, organic chemicals and inorganic wastes. Some of the above may be classified as "hazardous"
 - 4. Sanitary wastes:
 - a. Sewage: Domestic sanitary sewage
 - b. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing and consumption of food.
- E. Hazardous Materials: See also Section below titled "HAZARDOUS MATERIALS PROCEDURES."
 - 1. Except as otherwise specified, in the event the Contractor encounters on the site material

reasonably believed to be asbestos, polychlorinated biphenyl (PCB), or other hazardous materials which have not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Trustees in writing.

- 2. Work in affected areas shall not thereafter be resumed except by written agreement of the Trustees and Contractor if in fact the material is asbestos, PCB, or other hazardous materials and has not been rendered harmless.
- 3. Work in affected areas shall be resumed in the absence of asbestos, PCB, or other hazardous materials, or when such materials have been rendered harmless.
- F. Protection of Natural Resources: It is intended that the natural resources within the Project boundaries and outside the limits of permanent work performed under this Contract be preserved in their existing condition or be restored to an equivalent or improved condition upon completion of the work. Confine construction activities to areas defined by the public roads, easements, and work area limits shown on the drawings. Return construction areas to their pre-construction elevations except where surface elevations are otherwise noted to be changed. Maintain natural drainage patterns. Conduct construction activities such that ponding of stagnant water conducive to mosquito breeding habitat will not occur at any time.
 - 1. Land resources protection: Do not remove, cut, deface, injure or destroy trees or shrubs outside the work area limits. Do not remove, deface, injure or destroy trees within the Project area without permission from University's Representative. Such improvements shall be removed and replaced, if required, by the Contractor at no change in Contract Time and Contract Sum.
 - Landscaping protection: Protect trees that are located near the limits of Project area which may
 possibly be defaced, bruised or injured or otherwise damaged by the Contractor's operations. No
 ropes, cables or guys shall be fastened to or be attached to any existing nearby trees or shrubs
 for anchorages. Refer to additional requirements specified in Section 01560 Temporary
 Barriers and Controls.
 - a. Trimming: Refer to Section 01568 Tree and Plant Protection.
 - b. Excavations around trees: Refer to Section 01568 Tree and Plant Protection.
 - c. Repair and restoration: Repair or replace trees or other landscape feature scarred or damaged by equipment or construction operations as specified below. Repair and restoration plan shall be reviewed and approved by University's Representative prior to its initiation.
 - 3. Temporary construction:
 - a. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess or waste materials, or any other vestiges of construction as directed by the University's Representative.
 - b. Level all temporary roads, parking areas and any other areas that have become compacted or shaped.
 - c. Unpaved areas where vehicles have been operated shall receive suitable surface treatment or shall be periodically wetted down to prevent construction operations from producing dust damage and nuisance to persons and property, at no additional cost to the Trustees.
 - d. Keep haul roads clear at all times of any object that creates an unsafe condition. Promptly remove any contaminants or construction materials dropped from construction vehicles. Do not drop mud and debris from construction equipment on public streets. Sweep clean turning areas and pavement entrances as necessary.
 - 4. Water resources: Comply with all applicable Federal, State and local Codes, ordinances,

statutes and regulations pertaining to discharge (directly or indirectly) of pollutants to underground and natural waters.

- a. Perform all Work under the Contract in a manner that any adverse environmental impacts are reduced to a level that is acceptable to University's Representative and authorities having jurisdiction.
- b. Refer to Division 2 Site Construction, earthwork Sections, and Civil Drawings for specific requirements on control of storm water and disposal of water from dewatering activities.
- 5. Oily Substances: At all times, special measures shall be taken to prevent oily or other hazardous substances from entering the ground, drainage areas or local bodies of water in such quantities as to affect normal use, aesthetics or produce a measurable impact upon the areas. All soil or water that is contaminated with oily substances due to Contractor's operations shall be disposed of in accordance with applicable regulations, at no change in Contract Time and Contract Sum.
- 6. Report to the University all fuel, chemical, hydraulic fluid or other material spills, leaks and other incidents due to human or natural causes for evaluation. All work in the affected area shall stop until the University can complete its review. Should the University determine environments consultants, the Contractor will comply with any required assistance in the environmental review. All contamination shall be dealt with in accordance with all applicable laws and regulations.

1.5 SMOKE/ODOR CONTROL PROCEDURES

- A. Smoke/Odor Control: Protect primary fresh air intakes to existing buildings from exhaust from internal combustion engines, paint and solvent fumes and other noxious fumes and vapors.
 - 1. Implement control methods such as snorkels from engines exhausts to 50 feet away from air intakes. Provide carbon filters on air intakes as necessary, including periodic replacement of filters to ensure effectiveness.
 - 2. All other activities generating fumes shall be limited to minimum distance of 50 feet from air intake grilles.
 - 3. If fume-generating procedures must occur within 50 feet of an air intake, Contractor shall do the following:
 - a. Notify University's Representative at least 14 calendar days in advance of such activities.
 - b. Perform Work when it least impacts the University (evenings, weekends or particularly windy days).
 - c. Provide carbon filter media, plastic barriers, or other control methods to ensure fresh air only enters into the building ventilation system.

1.6 NOISE CONTROL PROCEDURES

- A. Noise Control Procedures, General: Requirements of this Section are in addition to those of Article 4.03 of the Contract General Conditions. Maximum noise levels within 1,000 feet of classrooms, laboratories, residences, businesses, adjacent buildings and other populated areas:
 - 1. Noise levels for trenchers, pavers, graders and trucks: Not exceeding 90 dBA at 50 feet as measured under noisiest operating conditions.
 - 2. Noise levels for all other equipment: Not exceeding 85 dBA at 50 feet.

- B. Noise Control of Equipment:
 - 1. Equip jackhammers with exhaust mufflers and steel muffling sleeves.
 - 2. Use air compressors of a quiet type such as a "whisperized" compressor. Compressor hoods shall be closed while equipment is in operation.
 - 3. Use electrically-powered rather than gasoline or diesel powered fork-lifts.
 - 4. Provide portable noise barriers around jack hammering, with barriers constructed of 3/4 inch plywood lined with 1-inch thick ductliner type fiberglass on Work side.
- C. Noise Control of Construction Operations:
 - 1. Keep noisy equipment as far as possible from noise-sensitive site boundaries.
 - 2. Machines shall not be left idling.
 - 3. Use electric power in lieu of internal combustion engine power whenever possible.
 - 4. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have properly functioning mufflers.
 - 5. Construction activity such as jack hammering, concrete sawing, asphalt removal, pile driving, and large-scale grading operations occurring within 200 feet of a academic building should be scheduled during holidays, class breaks, and/or summer session.
- D. Scheduling of Noisy Operations: Schedule construction activities to minimize time of noisy operations and disruption to occupants of adjoining facilities. Notify University's Representative in advance of performing Work creating unusual noise and schedule such Work at times mutually agreeable.
- E. Accessory Noise: Do not play radios, tape recorders, televisions, and other similar items at construction site.

1.7 DUST AND AIR POLLUTION CONTROL PROCEDURES

- A. Dust and Air Pollution Control Procedures, General: Requirements of this Section are in addition to those of Article 4.03 of the Contract General Conditions. Employ measures to prevent or minimize creation of dust and air pollution. Contractor shall appoint a dust control monitor to oversee and implement all measures specified in this Article.
- B. Provide proper barricades and take all other necessary measures required to prevent dust and fumes from migrating to other buildings. Fumes from welding and epoxy operations shall be properly ventilated away from building at all times. Contractor shall control dust properly throughout the construction period at the construction site, corporation yard (if applicable), dirt borrow site (if Applicable), and dirt access route. Should dust or fumes migrate to other building areas, it shall be the Contractor's responsibility to clean immediately the affected occupied areas and mechanical equipment, including air handlers and ductwork. Contractor shall be responsible and liable for all associated damages and costs due to dust and fume damage.

- 1. Unpaved areas shall be wetted down, to eliminate dust formation, a minimum of twice a day to reduce particulate matter. When wind velocity exceeds 15 mph, site shall be watered down more frequently.
- 2. Store all volatile liquids, including fuels or solvents in closed containers.
- 3. No on-site burning of debris, lumber and other scrap shall be permitted.
- 4. Properly maintain equipment to reduce gaseous pollutant emissions.
- 5. Exposed areas, new driveways and sidewalks shall be seeded, treated with soil binders or paved, as appropriate, as soon as possible.
- 6. Cover stockpiles of soil, sand and other loose materials.
- 7. Cover trucks hauling soil, debris, sand or other loose materials.
- 8. Sweep project area streets at least once daily. Refer to Section 01740 Cleaning Requirements.

1.8 WELDING AND BURNING MITIGATION PROCEDURES

- A. Welding and Burning Mitigation Procedures: Eliminate welding and burning of steel as much as possible. Where unavoidable, perform welding and burning with all possible precaution to avoid fire hazard. Provide a fire watch for minimum of 30 minutes after burning stops. Provide protection for all adjacent surfaces.
- B. Precautions shall be taken during the construction phase to minimize the likelihood of ignition,
 - 1) Smoking is prohibited within 50 feet of the construction area or material storage area.
 - 2) Open flames or heat sources required for construction will be closely monitored to minimize the risk of accidental ignition.
 - 3) Fire extinguishers and water hoses shall be made readily available by the Contractor and maintained in case of emergency.

1.9 EROSION AND SEDIMENT CONTROL PROCEDURES

A. Erosion and Sediment Control Procedures: Refer to runoff control requirements specified in Section 01570 - Temporary Controls. Obtain and comply with Storm Water Pollution Protection Plan (SWPPP) and project-specific requirements indicated on Civil Drawings.

1.10 DISPOSAL OPERATIONS PROCEDURES

- A. Solid Waste Management:
 - 1. Supply solid waste transfer containers. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles and litter. Take care to prevent trash and papers from blowing onto adjacent property. Encourage personnel to use refuse containers. Convey contents to a sanitary landfill.
 - 2. Washing of concrete containers where wastewater may reach adjacent property, storm drains or natural water courses will not be permitted. Remove any excess concrete to the sanitary landfill.

- B. Chemical Waste and Hazardous Materials Management: furnish containers for storage of spent chemicals used during construction operations. Dispose of chemicals and hazardous materials in accordance with applicable regulations.
- C. Garbage: Store garbage in covered containers, pick up daily and dispose of in a sanitary landfill.
- D. Grading Spoil and Landscape Debris: Dispose of vegetation, weeds, rubble, and other materials removed by the clearing, stripping and grubbing operations off site at a suitable disposal site in accordance with applicable Federal, State and local Codes, ordinances, statutes and regulations
- E. Excavated Materials:
 - 1. Native soil complying with the requirements of applicable Division 2 Site Construction earthwork Section, may be used for backfill, fill and embankments as allowed in applicable by that section.
 - 2. Remove all material which is excavated in excess of that required for backfill. Dispose of unsuitable excavated material from the site and dispose of it legally.
 - a. Excess suitable backfill material shall be hauled off site. No additional compensation will be paid to the Contractor for such off haul. Include all such costs in the Contract Sum.
 - b. Unsuitable backfill material shall be disposed of off-site in accordance with applicable regulations, in a disposal site indicated in the Environmental Protection Plan.
 - c. Remove rubbish and materials unsuitable for backfill immediately following excavation.
 - d. Remove material in excess of that required for backfill immediately following backfill operations.

1.11 CULTURAL RESOURCES PROCEDURES

- A. Cultural Resources Procedures: Requirements specified in this Section are in addition to those required by Article 4.03 of the Contract General Conditions.
 - 1. Project does not pass through any known archaeological sites. However, it is conceivable that unrecorded archaeological sites could be discovered during construction.
 - 2. In the event that artifacts, human remains, or other cultural resources are discovered during subsurface excavations at locations of the Work, the Contractor shall protect the discovered items, cease work for a distance of 35 feet radius in the area, notify the Architect and University Representative and comply with applicable law.
 - 3. Trustees may retain an Archaeologist to monitor and recover data and artifacts during period that work has ceased.
 - 4. All items found which are considered to have archaeological significance are the property of the University.

1.12 ALTERATION PROJECT PROCEDURES

- A. Coordinate the work of trades and schedule elements of alterations and renovation work by procedures and methods to expedite completion of the work.
- B. In addition to demolition specifically shown, cut, move or remove items as necessary to provide access or to allow alterations and new work to proceed. Include such items as:

- 1. Repair or removal of hazardous or unsanitary conditions.
- 2. Removal of abandoned items and items serving no useful purpose, such as abandoned piping, conduit and wiring.
- 3. Removal of unsuitable or extraneous materials not marked for salvage, such as abandoned furnishings and equipment, and debris such as rotted wood, rusted metals and deteriorated concrete.
- 4. Cleaning of surfaces, and removal of surface finishes as needed to install new work and finishes.
- C. Patch, repair and refinish existing items to remain, to the specified condition for each material, with a smooth and clean transition to adjacent new items of construction.
- D. Assign the work of moving, removal, cutting and patching, to trades qualified to perform the work in a manner to minimize the possibility of damage to each type of work, and provide means of returning surfaces to appearance of new work.
- E. Perform cutting and removal work with minimal disruption and in a manner to avoid damage to adjacent work.
- F. Cut finish surfaces such as masonry, tile, plaster or metals, using methods that terminate surfaces in a straight line at a natural point of division.
- G. Perform cutting and patching as specified in Section 01732 Cutting and Patching.
- H. Protect existing finishes, equipment, and adjacent construction that is scheduled to remain, from damage.
 - 1. Protect existing and new work from weather and extremes of temperature.
 - 2. Maintain existing interior work above 60 degrees F.
 - 3. Provide weather protection, waterproofing, heat and humidity control as needed to prevent damage to remaining work and to new work.

1.13 BLASTING CONTROL AND SAFETY PLAN

A. If the contractor decides to blast to remove rock, prior to construction, the Contractor shall prepare a Blasting Control and Safety Plan. This Plan shall indicate the location of all blasting activity, anticipated dates/times and pedestrian, construction worker and equipment/vehicle safety mechanisms that must be in place to ensure public safety. All blasting must occur within the parameters of the Blasting Control and Safety Plan. See Section 01400.

PART 2 - PRODUCTS

2.1 PRODUCTS FOR PATCHING, EXTENDING AND MATCHING

- A. Provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing.
- B. Generally the Contract Documents will not define products or standards of workmanship present in

existing construction; determine products by inspection and necessary testing, and determine quality of workmanship by using existing as a sample for comparison.

C. The presence of a product, finish, or type of construction requires that patching, extending or matching shall be performed as necessary to make work complete and consistent with identical standards of quality.

PART 3 - EXECUTION

3.1 CUTTING AND PATCHING

A. Perform cutting and patching as specified in Section 01732 - Cutting and Patching.

SECTION 01351

HAZARDOUS MATERIAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Hazardous materials abatement.

1.3 IDENTIFIED HAZARDOUS MATERIALS

A. Identified Hazardous Materials:

THE FOLLOWING IS AN EXAMPLE ONLY. DETERMINE IF HAZARDOUS MATERIAL STUDIES ARE APPLICABLE TO PROJECT AND, IF SO, IDENTIFY REPORT(S).

- Limited hazardous materials investigations have been conducted for the University by {insert name of environmental consultant}, the results of which are in a document titled "[_TITLE_]" dated [_DATE_]. This report is furnished to Contractor as Information Available to Contractor. The report is included in the Project Manual as Appendix [____].
- 2. Contractor shall perform hazardous materials abatement in compliance with requirements described in the document identified above. Costs and time associated with abatement of hazardous materials identified in this report shall be included in the Contract Sum and Contract Time.
 - a. Comply with California Code of Regulations, Title 8, Sections 1529, 1532.1 and 5208.
 - b. Comply with hazardous materials requirements in the University's Contractor Safety Handbook, provided to Contractor under separate cover by University's Representative.
- 3. Architect assumes no responsibility relating to existence of any hazardous materials, and Architect assumes no responsibility or liability for performance of Work described in the report identified above.

1.4 UNIDENTIFIED HAZARDOUS MATERIALS

- A. Unidentified Hazardous Materials:
 - 1. Information regarding known asbestos containing material (ACM) is available from University's office of Industrial Health & Instructional Safety.
 - 2. Except as otherwise specified, in the event that 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, the Contractor shall immediately stop work in the area

affected and report the condition to University's Representative.

- 3. Work in the affected area shall not be resumed except by written agreement between University and Contractor if in fact the material is asbestos, PCB, or other hazardous materials and has not been rendered harmless.
- 4. 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. Notification and Disclosure: Refer to Contract General Conditions for Asbestos Notification and Disclosure requirements. Refer to [_HAZARDOUS_MATERIALS_ABATEMENT_DOCUMENT_] for information available to Contractor.
 - 1. In the event that hazardous materials are discovered on site during performance of the Work, Contractor shall notify the University's Representative and request directions for abatement of hazardous materials.
 - 2. Comply with hazardous materials requirements in the University's Contractor Safety Handbook, provided to Contractor under separate cover by University's Representative.
 - 3. University will ensure that the identified hazardous waste and/or hazardous materials are handled and disposed in the manner specified by the State of California Hazardous Substances Control Law (Health and Safety Code Division 20, Chapter 6.5).

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

Not applicable to this Section.
SECTION 01352

LEED REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. General requirements and procedures for compliance with U.S. Green Building Council's (USGBC) LEED prerequisites and credits needed for the Project to obtain LEED Gold certification.
- B. Other LEED prerequisites and credits needed to obtain LEED certification are dependent on material selections and may not be specifically identified as LEED requirements.
- C. Compliance with requirements needed to obtain LEED prerequisites and credits may be used as one criterion to evaluate substitution requests under the provisions of Section 01630.
- D. 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.
- E. Related Sections include the following:
 - 1. Divisions 1 through 16 Sections for LEED requirements specific to the Work of each of those Sections. These requirements may or may not include reference to LEED.

1.2 DEFINITIONS

- A. 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.
- B. LEED: Leadership in Energy and Environmental Design.
- C. Regionally Manufactured Materials: Materials that are manufactured within a radius of 500 miles from the Project location. Manufacturing refers to the final assembly of components into the building product that is installed at the Project site.
- D. Regionally Extracted, Harvested, or Recovered Materials: Materials that are extracted, harvested, or recovered and manufactured within a radius of 500 miles from the Project site.
- E. Recycled Content: The percentage by weight of constituents that have been recovered or otherwise diverted from the solid waste stream, either during the manufacturing process (preconsumer), or after consumer use (post-consumer).
 - 1. Spills and scraps from the original manufacturing process that are combined with other constituents after a minimal amount of reprocessing for use in further production of the same product are not recycled materials.
 - 2. Discarded materials from one manufacturing process that are used as constituents in another manufacturing process are pre-consumer recycled material.

1.3 SUBMITTALS

- A. General: Submit additional LEED submittal requirement included in other sections of the Specifications.
- B. LEED submittals are in addition to other submittals. If submitted item is identical to that submitted to comply with other requirements, submit duplicate copies as a separate submittal to verify compliance with indicated LEED requirements.
- C. Project Materials Cost Data: Provide statement indicating total cost for building materials used for Project. Include statement indicating total cost of mechanical and electrical components.
- D. LEED Action Plans: Provide preliminary submittals within 10 working days of date established for the Notice of Award indicating how the following requirements will be met.
 - 1. Credit MR 2.1 and MR 2.2: Waste management plan complying with Division 1 Section 01524 Construction Waste Management.
 - 2. Credit MR 4.1 and MR 4.2: 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.
 - 3. Credit MR 5.1: List of proposed regionally manufactured materials and regionally extracted, harvested, or recovered materials.
 - (a) Identify each regionally manufactured material, its source, and cost.
 - (b) Identify each regionally extracted, harvested or recovered material, its source, and cost.
 - 4. Credit MR 7.0: 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.
 - 5. Credit EQ 3.1: Construction indoor air quality management plan.
- 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:
 - 1. Credit MR 2.1 and 2.2: Waste reduction progress reports complying with Division 1 Section - 01524 Construction Waste Management.
 - 2. Credit MR 4.1 and 4.2: Recycled content.
 - 3. Credit MR 5.1 and 5.2: Regionally manufactured materials and regionally extracted, harvested, or recovered materials.
- F. LEED Documentation Submittals:
 - 1. Credit SS 7.2: Product Data for roofing materials indicating Energy Star compliance.

- 2. Credit WE 3.1 and WE 3.2: Product Data for plumbing fixtures indicating water consumption.
- 3. Prerequisite EA 3.0: Product Data for new HVAC equipment indicating absence of CFC refrigerants.
- 4. Credit EA 4.0: Product Data for new HVAC equipment indicating absence of HCFC refrigerants.
- 5. Credit MR 2.1 and MR 2.2: Comply with Division 1 Section 01524 Construction Waste Management.
- 6. Credit MR 4.1 and MR 4.2: 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.
- 7. Credit MR 5.1: Product Data indicating location of material manufacturer for regionally manufactured materials.
 - (a) Include statement indicating cost and distance from manufacturer to Project for each extracted, processed, and regionally manufactured material.
- 8. Credit MR 7.0: Product Data and certificates of chain-of-custody for products containing certified wood.
 - (a) Include statement indicating costs for each product containing certified wood.
 - (b) Include statement indicating total cost for wood-based materials used for Project, including non-rented temporary construction.
- 9. Credit EQ 3.1:
 - (a) Construction indoor air quality management plan.
 - (b) Product Data for temporary filtration media.
 - (c) Product Data for filtration media used during occupancy.
 - (d) Construction Documentation: Six photographs at three different occasions, eighteen total, 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.
- 10. Credit EQ 3.2:
 - (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) Product Data for filtration media used during flush-out and during occupancy.

- 11. Credit EQ 4.1: Product data for adhesives and sealants used on the interior of the building indicating VOC content of each product used. Indicate VOC content limits according to South Coast Air Quality Management District (SCAQMD) Rule #1168. All sealants used as fillers must meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51.
- 12. Credit EQ4.2: Product data for paints and coatings used on the interior of the building indicating VOC content of each product according to Green Seal Standard GS-11.
- 13. Credit EQ 4.3: Product data for carpet products indicating VOC content of each product used according to the current limits of the Carpet and Rug Institute's Green Label Indoor Air Quality Test Program.
- 14. Credit EQ 4.4: Product data for composite wood and agrifiber products indicating that products contain no urea-formaldehyde resin.
 - (a) Include statement indicating adhesives and binders used for each product. .
- 15. Credit EQ 7.1: Product data and shop drawings for sensors and control system used to monitor and control mechanically ventilated room temperature and humidity. Verifying compliance with ASHRAE Standard 55-1992, Addenda 1995.

PART 2 PRODUCTS

2.1 RECYCLED CONTENT OF MATERIALS

- A. Credits MR 4.1 and MR 4.2: Provide building materials with recycled content such that postconsumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 20 percent of the cost of materials used for the regionally.
 - 16. 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.
 - 17. 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.
 - 18. Do not include mechanical and electrical components in the calculation.
 - 19. Recycled content of materials shall be defined according to the Federal Trade Commission's "Guide for the Use of Environmental Marketing Claims," 16 CFR 260.7(e), available at www.ftc.gov/bcp/grnrule/guides980427.html.

2.2 REGIONAL MATERIALS

A. Credit MR 5.1: Provide 10 percent of building materials (by cost) that are extracted, processed, and manufactured regionally.

2.3 CERTIFIED WOOD

A. Credit MR 7.0: Provide a minimum of 50 percent (by cost) of wood-based materials that are produced frm 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 made wood, engineered wood products, or wood-based panel products:
 - (a) TI Wood Truss Joists.
 - (b) Wood Doors.

2.4 LOW-EMITTING MATERIALS

- A. Credit EQ 4.1: For interior applications use adhesives and sealants that comply with the following limits for COV content when calculated according to South Coast Air Quality Management District (SCAQMD) Rule #1168, and must meet or exceed the requirements of the Bay Area Air Quality Management District Regulation 8, Rule 51:
 - 1. Wood Glues: 30g/L.
 - 2. Metal to Metal Adhesives: 30 g/L.
 - 3. Adhesives for Porous Materials (Except Wood): 50 g/L.
 - 4. Subfloor Adhesives: 50 g/L.
 - 5. Plastic Foam Adhesives: 50 g/L.
 - 6. Carpet Adhesives: 50 g/L.
 - 7. Carpet Pad Adhesives: 50g/L.
 - 8. VCT and Asphalt Tile Adhesives: 50 g/L.
 - 9. Cove Base Adhesives: 50 g/L.
 - 10. Gypsum Board and Panel Adhesives: 50 g/L.
 - 11. Rubber Floor Adhesives: 50 g/L.
 - 12. Ceramic Tile Adhesives: 65 g/L.
 - 13. Multi-Purpose Construction Adhesives: 70 g/L.
 - 14. Fiberglass Adhesives: 80 g/L.
 - 15. Structural Glazing Adhesives: 100 g/L.
 - 16. Wood Flooring Adhesive: 100 g/L.
 - 17. Contact Adhesive: 250 g/L.
 - 18. Plastic Cement Welding Compounds: 350 g/L.
 - 19. ABS Welding Compounds: 400 g/L.
 - 20. CPVC Welding Compounds: 490 g/L.
 - 21. PVC Welding Compounds: 510 g/L.

- 22. Adhesive Primer for Plastic: 650 g/L.
- 23. Sealants: 250 g/L.
- 24. Sealant Primers for Nonporous Substrates: 250 g/L.
- 25. Sealant Primers for Porous Substrates: 775 g/L.
- B. Credit EQ 4.2: For interior applications use paints and coatings that comply with the following limits for VOC content when calculated according to 40 CFR 59, subpart D (EPA method 24) and Green Seals Standard GS-11 requirements.
 - 1. Flat Paints and Coatings: VOC not more than 50 g/L.
 - 2. Non-Flat Paints and Coatings: VOC not more than 150 g/L.
 - 3. Anti-Corrosive Coatings: VOC not more than 250 g/L.
 - 4. Varnishes and Sanding Sealers: VOC not more than 350 g/L.
 - 5. Stains: VOC not more than 250 g/L.
 - 6. 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).
 - 7. 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.
 - (I) 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. Credit EQ 4.4: Do not use composite wood and agrifiber products that contain ureaformaldehyde resin.

PART 3 EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

A. Credit MR 2.1 and MR 2.2: Comply with Division 1 Section 01524 - Construction Waste Management.

3.2 CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT

- A. Credit EQ 3.1: Develop and implement an Indoor Air Quality Management Plan (I A M P) for the construction and pre-occupancy phases of the Work as follows:
 - 1. Comply with SMACNA IAQ Guideline for Occupied Buildings under Construction, 1995, Chapter 3.
 - 2. Protect stored on-site or installed absorptive materials form moisture damage.
 - When air handlers are used during construction, filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 must be used at each return grill, as determined by ASHRAE 52.2 – 1999.
 - 4. Replace all filtration media immediately prior to occupancy. Filtration media with a Minimum Efficiency Reporting Value (MERV) of 13, as determined by ASHRAE 52.2 1999 for media installed at the end of construction.
- B. Credit EQ 3.2: Develop and implement an Indoor Air Quality Management Plan (I A M P) for the pre-occupancy phase of the Work as follows:

 After construction ends and prior to occupancy conduct a minimum two-week building flush out with new Minimum Efficiency Reporting Value (MERV) 13 filtration media at 100 percent outside air. Replace filtration media with new MERV 13 filtration media except the filters processing solely outside air.

END OF SECTION

SECTION 01355

SAFETY AND HEALTH PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Procedures for health and safety protection and requirements for reporting accidents.

1.3 RELATED SECTIONS

- A. Section 01351 Hazardous Material Procedures: Protection from asbestos containing materials (ACM), polychlorinated biphenyl (PCB), or other hazardous materials.
- B. Section 01560 Temporary Barriers and Enclosures: Protective barriers.

1.4 SUBMITTALS

A. Accident Reporting: California State University San Marcos (CSUSM) is committed to maintaining a safe, accident-free, working environment for all employees, students, and the visiting public. All Contractors are required to implement all necessary measures to achieve the goal of an accident-free project site. The positive participation of all contractors and subcontractors and their employees toward attainment of this goal is mandatory.

The contractor's responsibilities include, but are not limited to:

- The exclusive responsibility for the safety and health of everyone on their worksite including their employees, subcontractors and their employees, visitors, and guests.
- Compliance with applicable Safety, Environmental, and Hazardous Materials related laws and regulations.
- If requested, a complete written Injury and Illness Prevention Program (IIPP) that covers the entire scope of work performed by the contractor and its subcontractors is to be made available. This IIPP must comply with all contractual and CAL/OSHA requirements. Evidence could be in the form of the cover page signed by the contractor or written correspondence that confirms one is in place.
- Maintain your own MSDS library for all hazardous materials that are onsite. Or have a mechanism in place for retrieval of such information immediately upon request.
- Mitigate operations to minimize indoor/outdoor air quality issues.
- Report to the University all fuel, chemical, hydraulic fluid or other material spills, leaks and other incidents due to human or natural causes for evaluation. All work in the affected area shall stop until the University can complete its review. Should the University determine environments consultants, the Contractor will comply with any required assistance in the environmental review. All contamination shall be dealt with in accordance with all applicable laws and regulations.

> Follow campus safety procedures as they relate to control of hazardous energy and electrical safety.

In the event of an accident or incident:

- Care for the injured is the first concern at an accident scene. Dial the University dispatcher from a campus phone by dialing 911 or 4567. From an outside line the number is (760) 750-4567. Contact Risk Management and Safety Office immediately after securing the accident/incident scene and providing and/or obtaining any needed assistance.
- 2. The RMS and/or UP investigation will begin when the scene of the accident or incident is safe to approach.
- 3. Comply with all CAL/OSHA reporting requirements including completing the CAL/OSHA Report of Occupational Injury or Illness results form when the injury or illness results in absence from work for more than 1 day, and providing the employee an Employee Claim Form for Workers Compensation Benefits within 24 hours of learning of the injury or illness. Report the accident to the nearest CAL/OSHA district office within 8 hours if an employee is fatally injured or if an injured employee is hospitalized for more than 24 hours for more than routine observation.
- 4. Provide CSUSM University Police and RM&S with a copy of the CAL/OSHA report and a copy of the employer's accident investigation report.
- 5. In the event of a hazardous material spill or release at a minimum do the following;
 - a) Secure the area
 - b) Control the spill/release
 - c) Ensure personnel are protected during control/clean-up operations
 - d) Document the incident
 - e) Work with RM&S and UPD to mitigate the incident and ensure proper documentation.
- B. Other Submittals: If agreed to in writing at the preconstruction safety meeting, other submittals shall be required. One such submittal that may be included is a plan of action for handling hazardous materials to contain the following:
 - 1. Number, type, and experience of employees to be used for the Work
 - 2. Description of how safety and health regulations and standards shall be met
 - 3. Type of protective equipment and work procedures to be used
 - 4. Emergency procedures for accidental spills or exposures.

PART 2 - PRODUCTS

2.1 GENERAL

A. Special facilities, devices, equipment, clothing, and similar items used by the Contractor in the execution of the Work shall comply with applicable regulations.

PART 3 - EXECUTION

3.1 STOP WORK ORDERS

- A. Stop Work Orders:
 - 1. When the Contractor or its subcontractors are notified by the University's Representative of an incident of noncompliance with the provisions of the Contract, and the action(s) to be taken, the Contractor shall immediately, if so directed, or within 48 hours after receipt of a notice of violation, correct the unsafe or unhealthy condition.
 - 2. If the Contractor fails to comply promptly, all or any part of the work performed may be stopped by with a "Stop Work Order." When, in the opinion of the University's Representative, satisfactory corrective action has been taken to correct the unsafe and unhealthy condition, a start order will be given immediately.
 - 3. The Contractor shall not be allowed any extension of time or compensation for damages by reason of or in connection with such work stoppage.

3.2 PROTECTION

- A. Protection: Contractor shall take all necessary precautions to prevent injury to the public, building occupants, or damage to property of others.
 - 1. For the purposes of the Contract, the public or building occupants shall include all persons not employed by the Contractor or a subcontractor working under the Contractor's direction.
 - 2. Work shall not be performed in any area occupied by the public or Owner's employees unless specifically permitted by the Contract or the Owner and unless adequate steps are taken for the protection of the public and the Owner's employees.
 - 3. Whenever practicable, the work area shall be fenced, barricaded, or otherwise blocked off from the public or building occupants to prevent unauthorized entry into the work area.
- B. Alternate Precautions: When the nature of the Work prevents isolation of the work area, and the public or building occupants may be in or pass through, under or over the work area, alternate precautions such as the posting of signs, the use of signal persons, the erection of barricades or similar protection around particularly hazardous operations shall be used as appropriate.
- C. Public Thoroughfare: When Work is to be performed over a public thoroughfare such as a sidewalk, lobby, or corridor, the thoroughfare shall be closed, if possible, or other precautions taken such as the installation of screens or barricades. When the exposure to heavy falling objects exists, as during the erection of building walls or during demolition, special protection of the type detailed in 29 CFR 1910/1926 shall be provided.
- D. Hazardous Conditions: Storing, positioning or use of equipment, tools, materials, scraps, and trash in a manner likely to present a hazard to the public or building occupants by its accidental shifting, ignition, or other hazardous qualities is prohibited.

END OF SECTION

SECTION 01400

BLASTING PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Blasting procedures and safety measures

1.3 Blasting Submittals

A. The contractor must submit a blasting plan that addresses the blasting radius and potentially affected areas on and off campus. The contractor will be responsible for all applicable federal, state, and local blasting safety regulations, licensing and permitting in accordance with but not limited to: CCR Title 8, Construction Safety Orders (CSO); §344.20, Blaster's License Application and Examination; §5238, Competency and Qualifications of Blasters; and any of Subchapter 7, General Industry Safety Orders (GISO), Group 18, Explosives and Pyrotechnics, §5291, Firing of Explosives, applicable to the project. In addition the blasting subcontractor will have a California C12 Earthwork and Paving license including having the certification for using explosives according to proceeding regulations.

1.4 Notifications

A. For blasting affecting property under the jurisdiction of the City of San Marcos, blasting contractors shall abide by City of San Marcos (Ordinance 04-622) and the regulations established by the County of San Diego. Blasting contractors shall give at least 12 hours notice prior to blasting to any business or residence potentially affected by blasting under the jurisdiction of the City of San Marcos and conduct inspection to determine appropriate safety precaution measures. If blasting impacts City residents and businesses, notice shall be approved by the City of San Marcos Building Director at least 12 hours prior to blasting. Notice shall also be provided to the City of San Marcos Fire Department at least 12 hours prior to blasting. Buildings or other in-use facilities that may be potentially affected by blasting will be inspected by a structural engineer designated by the University hired by the blasting contractor. In addition to the statutory requirements listed above, the following rules and definitions shall be in effect.

1.5 Procedures and Safety Measures

A. <u>"Close Proximity" Shots</u>

"Close Proximity" Shots are defined as blasting near adjacent structures for the purposes of aggregate production, detailed land contouring/grading, pipeline or other trench excavation and other similar activities and/or whose purpose is primarily construction related, as agreed upon in the blasting plan. Close proximity shots are densely controlled and effectively smaller than production shots in regards to drill pattern, drill-hole number, size and exposure charge.

Occupied buildings or other in-use facilities which are potentially affected by the blasting, as agreed upon in the blasting plan, will be evacuated immediately prior to the shot. The blasting contractor in conjunction with University Police Department, University Building Marshals and other University assigned employees shall evacuate occupied buildings and other in-use facilities. Any persons trying to re-enter the blasting area will be escorted off the blasting site during the shot. Buildings can be re-occupied following the "All Clear" signal from the blaster-in-charge.

Close proximity shots will occur primarily on Fridays. Notification of such shots will be made to the University not less than five business days prior.

In blasting areas facing buildings, structures and improvements, additional over-burden material will be placed to cover the face of the shots. This additional burden will provide an enhanced cushion and will assist to contain material within the blast area. Further, when blasting in a location where flying rock or material may damage other property, all loaded holes shall be covered with an adequate blasting mat that has been securely anchored.

B. <u>"Boulder Shots"</u>

"Boulder Shots" are defined as the blasting of individual, separate boulders of such size that it is impractical and/or unsafe to break in any other fashion. Boulder shots are densely controlled and effectively smaller than other types of shots in regards to borehole number, size and powder amounts.

Boulders that are to be shot will be moved away from buildings and parking lots to avoid evacuation of same, as agreed upon in the blasting plan.

The University shall be notified no later than five business days prior to the onset of boulder shots.

C. General Contractor, Grading Contractor, and/or Blasting Contractor

The contractor is to submit a blasting plan, including drawings/"maps" using scaled radiuses or other indicators, showing the anticipated extent of the affected areas for review and approval by the University a minimum of 21 calendar days prior to the start of blasting. The blasting contractor and the University will determine what shall be considered close proximity shots and boulder shots, as well as appropriate blasting distances. Primary concerns are the prevention of fly rock and ground movement that could cause property damage or personal injury. The contractor is to conduct pre-blast surveys, as required by all applicable federal, state, and local blasting safety regulations, to account for possible property damage or personal injury. Further, the contractor assumes full responsibility for any other adverse phenomenon associated with blasting.

If the results of the blasting are not satisfactory to the University, all blasting work will be suspended and other means will be used to remove the material to be excavated. In accordance with the blasting plan and contract, if the general contractor, grading subcontractor or blasting contractor becomes aware of the need for significant changes in the blasting plan or changes in expected conditions, notice must be given to the University immediately.

On the day of the blast the blasting contractor, in conjunction with the University Police Department, University Building Marshals, and other University assigned employees, will post and maintain warning signs with lettering not less than 4 inches in height on a contrasting background indicating the blast area at all approaches to the blast area ,; educate campus community to the whistles and warning notifications; and ensure the warning signal is audible at all points throughout the campus.

General contractor personnel, blasting contractor personnel and University personnel shall meet periodically to discuss the work progress, safety issues, mutual concerns, and other matters as deemed necessary to ensure the successful completion of blasting work.

D. University

The University will review and approve the submitted blasting plan and reserves the right to require additional safety measures to be in place prior to blasting. Blasting can be approved during the academic year to occur primarily on Fridays on the following dates/times: during standard time from 3 - 4 p.m. and during daylight savings time from 4 - 5 p.m. Any requests for close proximity blasting outside of this schedule will be considered by Executive Council, or their designee, on a case-by-case basis and require a request from the General Contractor to the University of not less than five business days (M – F) prior to the requested blast.

Specific blast days/times may be posted in advance on a Web site easily accessible by all on campus.

The University shall notify the campus community of the blasting activity, dates/times, and what they are to do during blasting (stay away!). Notification may include, but is not limited to, communication to students, employees and visitors, posting notices in campus publications and University websites and making announcements in affected classrooms on blasting dates.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

Not applicable to this Section.

END OF SECTION

SECTION 01410

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 AUTHORITY AND PRECEDENCE OF CODES, ORDINANCES AND STANDARDS

A. Authority: All codes, ordinances and standards referenced in the Drawings and Specifications shall have the full force and effect as though printed in their entirety in the Specifications.

B. Precedence:

- 1. Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements shall take precedence.
- 2. Where the Drawings or Specifications require or describe products or execution of better quality, higher standard or greater size than required by applicable codes, ordinances and standards, the Drawings and Specifications shall take precedence so long as such increase is legal.
- 3. Where no requirements are identified in the Drawings or Specifications, comply with all requirements of applicable codes, ordinances and standards of authorities having jurisdiction.

1.3 APPLICABLE CODES, LAWS AND ORDINANCES

- A. Applicable Codes, Laws and Ordinances: Refer also to Section 01100 Summary of the Work regarding permits and licenses.
 - 1. Performance of the Work shall meet or exceed the minimum requirements of the most current California Code of Regulations (CCR), Title 24, including the following, but not limited to:
 - a. CCR Title 24, Part 1: California Building Standards Administrative Code.
 - b. CCR Title 24, Part 2: California Building Code (CBC), consisting of Uniform Building Code (UBC) Volumes 1 through 3, with State of California Amendments.
 - c. CCR Title 24, Part 3: California Electrical Code (CEC); consisting of National Fire Protection Association (NFPA) 70 - National Electrical Code (NEC), with State of California Amendments.
 - d. CCR Title 24, Part 4: California Mechanical Code (CMC); consisting of Uniform Mechanical Code (UMC) with State of California Amendments.
 - e. CCR Title 24, Part 5: California Plumbing Code (CPC); consisting of Uniform Plumbing Code (UPC) with State of California Amendments.
 - f. CCR Title 24, Part 9: California Fire Code (CFC); consisting of Uniform Fire Code (UFC) with 2001 State of California Amendments.
 - g. CCR Title 24, Part 12: California Reference Standards Code; consisting of Uniform Building Code Standards (UBC Standards) with State of California Amendments.

- 2. Performance of the Work shall also comply with applicable requirements of California Code of Regulations (CCR) as follows:
 - a. Title 19 Public Safety
 - b. Title 22 Social Security
- 3. References on the Drawings or in the Specifications to "code", "Code" or "building code" similar terms, not otherwise identified, shall mean the codes specified above, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction having authority over the Project.
- 4. The applicable edition of all codes shall be that adopted at the time of issuance of permits by the authority having jurisdiction and shall include all modifications and additions adopted by that authority. The applicable date of laws and ordinances shall be that of the date of performance of the Work.
- B. Other Applicable Laws, Ordinances and Regulations:
 - 1. Work shall be accomplished in conformance with all applicable laws, ordinances, rules and regulations of Federal, State, County, City and special district agencies and jurisdictions having authority over the Project.
 - 2. Performance of the Work shall be accomplished in conformance with all rules and regulations of public utilities, utility districts and other agencies serving the facility.
 - 3. Where such laws, ordinances, rules and regulations require more care or greater time to accomplish Work, or require better quality, higher standards or greater size of products, Work shall be accomplished in conformance to such requirements with no change to the Contract Time and Contract Sum, except where changes in laws, ordinances, rules and regulations occur subsequent to the execution date of the Agreement.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

END OF SECTION

SECTION 01420

REFERENCE STANDARDS AND ABBREVIATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Use of references in Drawings and Specifications, including requirements for copies of reference standards at Project site.
- B. Definitions of terms used in Specifications and Drawings, including abbreviations, acronyms, names and terms which may be used in Specifications.

1.3 RELATED SECTIONS

A. Section 01410 - Regulatory Requirements: Identification of applicable building Code and other codes, ordinances and regulations applicable to performance of the Work.

1.4 USE OF REFERENCES

- A. References: The Drawings and Specifications contain references to various standards, standard specifications, codes, practices and requirements for products, execution, tests and inspections.
 These reference standards are published and issued by the agencies, associations, organizations and societies listed in this Section or identified in individual product specification Sections.
 - 1. Wherever term "Agency" occurs in Standard Specifications, it shall be understood to mean the term used for University for purposes of the Contract.
 - 2. Wherever term "Engineer" occurs in Standard Specifications, it shall be understood to mean Architect or other responsible design professional for purposes of the Contract.
 - 3. Where reference is made to Standard Details, such reference shall be to the Standard Details accompanying the Standard Specifications.

B. SPECIFICATION FORMATS AND CONVENTIONS

- 1. Specification format: The specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC's "MasterFormat" numbering systems.
- Section Identification: The Specifications use Section numbers and titles to help crossreferencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
- 3. Division 1: sections in Division 1 govern the execution of the Work if all Sections in the Specifications.

4. Specification Content: The specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations.

- 5. These conventions are as follows:
 - Abbreviated language: language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural and plural words shall be interpreted as singular where applicable as the context of the Contract Document indicates.
 - b. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - c. The words "shall," "shall be," of "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
- C. Relationship to Drawings and Specifications: Such references are incorporated into and made a part of the Drawings and Specifications to the extent applicable.
- D. Referenced Grades Classes and Types: Where an alternative or optional grade, class or type of product or execution is included in a reference but is not identified on the Drawings or in the Specifications, provide the highest, best and greatest of the alternatives or options for the intended use and prevailing conditions.
- E. Copies of Reference Standards:
 - 1. Reference standards are not furnished with the Drawings and Specifications because it is presumed that the Contractor, subcontractors, manufacturers, suppliers, trades and crafts are familiar with these generally-recognized standards of the construction industry.
 - 2. Copies of reference standards may be obtained from publishing sources.

REVIEW LIST AGAINST ACTUAL TYPE AND SIZE OF PROJECT AND SELECT ACCORDINGLY. COMPLETE LIST IS COSTLY AND MAY ONLY BE WARRANTED ON LARGE, COMPLICATED PROJECTS.

- F. Jobsite Copies:
 - 1. Contractor shall obtain and maintain at the Project site copies of reference standards identified on the Drawings and in the Specifications in order to properly execute the Work.
 - 2. At a minimum, the following shall be readily available at the site, as applicable to the Work:
 - a. State Building Codes: As referenced in Section 01410 Regulatory Requirements.
 - b. Safety Codes: Occupational Safety and Health Act (OSHA) regulations and State of California, California Administrative Code, California Code of Regulations (CCR), Title 8 -Industrial Relations, Chapter 4, Subchapter 7, General Industry Safety Orders (Cal-OSHA), to extent applicable to the Work.
 - c. General Standards:
 - 1) CCR Title 24, Part 2, Volume 3: 2001 California Building Code (CBC) Material, Testing and Installation Standards.

- 2) CCR Title 24, Part 12: 2001 California Referenced Standards Code.
- 3) Underwriters Laboratories, Inc. (UL) Building Products Listing.
- 4) Factory Mutual Research Organization (FM) Approval Guide.
- 5) American Society for Testing and Materials (ASTM) Standards in Building Codes.
- 6) American National Standards Institute (ANSI) standards.
- d. Fire and Life Safety Standards: All referenced standards pertaining to fire rated construction and exiting.
- e. Common Materials Standards: American Concrete Institute (ACI), American Institute of Steel Construction (AISC), American Welding Society (AWS), Gypsum Association (GA), National Fire Protection Association (NFPA), Tile Council of America (TCA) and Woodwork Institute of California (WIC) standards to the extent referenced within the Contract Specifications.
- f. Research Reports: ICC Evaluation Service, Inc. (ICC-ES), formerly ICBO Evaluation Service, Inc. (ICBO ES) Research Reports and National Evaluation Service, Inc. Reports (NER), for products not in conformance to prescribed requirements stated in California Building Code (CBC).
- g. Product Listings: Approval documentation, indicating approval of authorities having jurisdiction for use of product within the applicable jurisdiction.
- G. Edition Date of References:

CONSULT WITH UNIVERSITY'S REPRESENTATIVE AND DETERMINE WHICH OPTION IN PARA BELOW APPLIES.

- 1. When an edition or effective date of a reference is not given, it shall be understood to be the current edition or latest revision published as of the date of the [Agreement] [Contract Drawings and Contract Specifications].
- 2. All amendments, changes, errata and supplements as of the effective date shall be included.
- H. ASTM and ANSI References: Specifications and Standards of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI) are identified in the Drawings and Specifications by abbreviation and number only and may not be further identified by title, date, revision or amendment. It is presumed that the Contractor is familiar with and has access to these nationally- and industry-recognized specifications and standards.

1.5 DEFINITIONS OF TERMS

- A. Basic Contract Definitions: Words and terms governing the Work are defined in the Contract General and Supplementary Conditions, as referenced in the Agreement.
- B. Words and Terms Used on Drawings and in Specifications: Additional words and terms may be used in the Drawings and Specifications and are defined as follows:
 - 1. "Applicable:" As appropriate for the particular condition, circumstance or situation.
 - 2. "Approve(d):" Approval action shall be limited to the duties and responsibilities of the party giving approval, as stated in the Conditions of the Contract. Approvals shall be valid only if obtained in writing and shall not apply to matters regarding the means, methods, techniques, sequences and procedures of construction. Approval shall not relieve the Contractor from responsibility to fulfill

Contract requirements.

- 3. "And/or:" If used, shall mean that either or both of the items so joined are required.
- 4. "Directed:" Limited to duties and responsibilities of the University's Representative or Architect as stated in the Contract General Conditions, meaning "as instructed by the University's Representative or Architect, in writing, regarding matters other than the means, methods, techniques, sequences and procedures of construction. Terms such as "directed", "requested", "authorized", "selected", "approved", "required", and "permitted" mean "directed by the University's Representative or Architect", "requested by the University's Representative or Architect", "requested by the University's Representative or Architect", "requested by the University's Representative or Architect", and similar phrases. No implied meaning shall be interpreted to extend the responsibility of the University's Representative, Architect or other responsible design professional into the Contractor's supervision of construction.
- 5. "Equal" or "Equivalent:" As determined by Architect or other responsible design professional as being equivalent, considering such attributes as durability, finish, function, suitability, quality, utility, performance and aesthetic features.
- 6. "Furnish:" Means "supply and deliver, to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
- 7. "Indicated:" The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown", "noted", "scheduled", and "specified" are used to help the reader locate the reference. There is no limitation on location.
- 8. "Install:" Describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations.
- 9. "Installer:"
 - a. "Installer" refers to the Contractor or an entity engaged by the Contractor, such as an employee, subcontractor, or sub-subcontractor for performance of a particular construction activity, including installation, erection, application and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - b. "Experienced Installer:" The term "experienced," when used with "installer" means having a minimum of 5 previous Projects similar in size to this Project, knowing the precautions necessary to perform the Work, and being familiar with requirements of authorities having jurisdiction over the Work.
- 10. "Jobsite:" Same as site.
- 11. "Necessary:" With due considerations of the conditions of the Project and as determined in the professional judgment of the Architect or other responsible design professional as being necessary for performance of the Work in conformance with the requirements of the Contract Documents, but excluding matters regarding the means, methods, techniques, sequences and procedures of construction.
- 12. "Noted:" Same as "Indicated."
- 13. "Per:" Same as "in accordance with," "according to" or "in compliance with."

- 14. "Products:" Material, system or equipment.
- 15. "Project Site:" Same as "Site."
- 16. "Proper:" As determined by the Architect or other responsible design professional as being proper for the Work, excluding matters regarding the means, methods, techniques, sequences and procedures of construction, which are solely the Contractor's responsibility to determine.
- 17. "Provide:" Means "furnish and install, complete and ready for the intended use."
- 18. "Regulation:" Includes laws, ordinances, statutes and lawful orders issued by authorities having jurisdiction, as well as and rules, conventions and agreements within the construction industry that control performance of the Work.
- 19. "Required:" Necessary for performance of the Work in conformance with the requirements of the Contract Documents, excluding matters regarding the means, methods, techniques, sequences and procedures of construction, such as:
 - a. Regulatory requirements of authorities having jurisdiction.
 - b. Requirements of referenced standards.
 - c. Requirements generally recognized as accepted construction practices of the locale.
 - d. Notes, schedules and graphic representations on the Drawings.
 - e. Requirements specified or referenced in the Specifications.
 - f. Duties and responsibilities stated in the Bidding and Contract Requirements.
- 20. "Scheduled:" Same as "Indicated."
- 21. "Selected:" As selected by the University's Representative, Architect or other responsible design professional from the full selection of the manufacturer's products, unless specifically limited in the Contract Documents to a particular quality, color, texture or price range.
- 22. "Shown:" Same as "Indicated."
- 23. "Site:" Same as "Site of the Work" or "Project Site;" the area or areas or spaces occupied by the Project and including adjacent areas and other related areas occupied or used by the Contractor for construction activities, either exclusively or with others performing other construction on the Project. The extent of the Project Site is shown on the Drawings, and may or may not be identical with the description of the land upon which the Project is to be built.
- 24. "Supply:" See "Furnish."
- 25. "Testing Laboratory" or "Testing Laboratories:" An independent entity engaged to perform specific inspections or tests, at the Project Site or elsewhere, and to report on, and, if required, to interpret, results of those inspections or tests. Refer to Section 01458 Testing Laboratory Services.
- 26. "Testing and Inspection Agency:" Same as "Testing Laboratory."

1.6 ABBREVIATIONS, ACRONYMS, NAMES AND TERMS, GENERAL

A. Abbreviations, Acronyms, Names and Terms: Where acronyms, abbreviations, names and terms are used in the Drawings, Specifications or other Contract Documents, they shall mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other

entity applicable.

B. Abbreviations, General: The following are commonly-used abbreviations which may be found on the Drawings or in the Specifications:

AC or ac	Alternating current or air conditioning (depending upon context)
AMP or amp	Ampere
С	Celsius
CFM or cfm	Cubic feet per minute
CM or cm	Centimeter
CY or cy	Cubic yard
DC or dc	Direct current
DEG or deg	Degrees
F	Fahrenheit
FPM or fpm	Feet per minute
FPS or fps	Feet per second
FT or ft	Foot or feet
Gal or gal	Gallons
GPM or gpm	Gallons per minute
IN or in	Inch or inches
Kip or kip	Thousand pounds
KSI or ksi	Thousand pounds per square inch
KSF or ksf	Thousand pounds per square foot
KV or kv	Kilovolt
KVA or kva	Kilovolt amperes
KW or kw	Kilowatt
KWH or kwh	Kilowatt hour
LBF or lbf	Pounds force
LF or If	Lineal foot
M or m	Meter
MPH or mph	Miles per hour
MM or mm	Millimeter
PCF or pcf	Pounds per cubic foot
PSF or psf	Pounds per square foot
PSI or psi	Pounds per square inch
PSY or psy	Per square yard
SF or sf	Square foot
SY or sy	Square yard
V or v	Volts

C. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

- D. Undefined Abbreviations, Acronyms, Names and Terms: Words and terms not otherwise specifically defined in this Section, in the Instructions to Bidders, in the Contract General Conditions, on the Drawings or elsewhere in the Specifications, shall be as customarily defined by trade or industry practice, by reference standard and by specialty dictionaries such as the following:
 - 1. <u>Dictionary of Architecture and Construction, Third Edition</u> (Cyril M. Harris, McGraw-Hill Book Company, 2000).
 - 2. The American Institute of Architects (AIA) Document M101, "Glossary of Construction Industry Terms."
 - 3. <u>Encyclopedia of Associations</u>, published by Gale Research Co., commonly available in public libraries.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

END OF SECTION

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SECTION 01450

QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Regulatory requirements for testing and inspection.
- B. Contractor's quality control.
- C. Quality of the Work.
- D. Inspections and tests by authorities having jurisdiction.
- E. Inspections and tests by serving utilities.
- F. Inspections and tests by manufacturer's representatives.

1.3 RELATED SECTIONS

- A. Section 01310 Coordination: Coordination of Work under Contract.
- B. Section 01410 Regulatory Requirements: Compliance with applicable codes, ordinances and standards.
- C. Section 01458 Testing Laboratory Services: Selection of independent testing and inspection laboratory; tests and inspections conducted by testing laboratory.
- D. Section 01610 Basic Product Requirements: Product options, substitutions, transportation and handling requirements, storage and protection requirements, and system completeness requirements.

1.4 REGULATORY REQUIREMENTS FOR TESTING AND INSPECTION

- A. Building Code Requirements: Comply with requirements for testing and inspections in the California Building Code (CBC), as interpreted by authorities having jurisdiction. Additional requirements for testing and inspection, as adopted by authorities having jurisdiction, shall be included in the Contract Sum and Contract Time.
- B. Requirements of Fire Regulations: Comply with testing and inspection requirements of the Fire Marshal having jurisdiction. All tests and inspections shall be included in Contract Sum and Contract Time.

1.5 CONTRACTOR'S QUALITY CONTROL

A. Contractor's Quality Control: Contractor shall ensure that products, services, workmanship and site

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conditions comply with requirements of the Drawings and Specifications by coordinating, supervising, testing and inspecting the Work and by utilizing only suitably qualified personnel.

- B Contractor shall submit to the University for approval a quality control plan and reporting procedure. As a minimum the report, to be submitted to the University monthly, shall include specific scope of work, quality requirements for work, photographic documentation of work and acceptance by the University. All work within enclosed spaces must be documented for compliance to quality control requirements prior to close-in. As a minimum, work to be documented for quality control assurance shall include the following:
 - 1. Underground utilities
 - 2. Irrigation

- 3. Reinforcing bars and vapor barriers
- 4. Below grade waterproofing
- 5. Electrical and plumbing wall rough in
- 6. Window and door waterproofing and caulking
- 7. Tile setting materials
- 8. Above grade waterproofing including roofing and substrates
- BC. Quality Requirements: Work shall be accomplished in accordance with quality requirements of the Drawings and Specifications, including, by reference, all Codes, laws, rules, regulations and standards. When no quality basis is prescribed, the quality shall be in accordance with the best accepted practices of the construction industry for the locale of the Project, for projects of this type.
- CD. Quality Control Personnel: Contractor shall employ and assign knowledgeable and skilled personnel as necessary to perform quality control functions to ensure that the Work is provided as required.
- DE. Coordination of Field Quality Control: Contractor shall coordinate and schedule field quality control activities of University's independent testing and inspection agency and inspectors from authorities having jurisdiction.

1.6 QUALITY OF THE WORK

- A. Quality of Products: Unless otherwise indicated or specified, all products shall be new, free of defects and fit for the intended use.
- B. Quality of Installation: All Work shall be produced plumb, level, square and true, or true to indicated angle, and with proper alignment and relationship between the various elements.
- C. Protection of Existing and Completed Work: Take all measures necessary to preserve and protect existing and completed Work free from damage, deterioration, soiling and staining, until Acceptance by the University.
- D. Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Unless more stringent requirements are indicated or specified, comply with manufacturer's instructions and recommendations, reference standards and building code research report requirements in preparing, fabricating, erecting, installing, applying, connecting and finishing Work.
- E. Deviations from Standards and Code Compliance and Manufacturer's Instructions and Recommendations: Document and explain all deviations from reference standards and building code research report requirements and manufacturer's product installation instructions and recommendations, including acknowledgement by the manufacturer that such deviations are acceptable and appropriate for the Project.

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- F. Verification of Quality: Work shall be subject to verification of quality by University or Architect in accordance with provisions of the Contract General Conditions.
 - 1. Contractor shall cooperate by making Work available for inspections and observations by University's Representative, Architect and their consultants.
 - 2. Such verification may include mill, plant, shop, or field inspection, as required.
 - 3. Provide access to all parts of the Work, including plants where materials or equipment are manufactured or fabricated.
 - Provide all information and assistance as necessary, including that from subcontractors, fabricators, materials suppliers and manufacturers, for verification of quality by University's Representative or Architect.
 - 5. Contract modifications, if any, resulting from such verification activities shall be governed by applicable provisions in the Contract General Conditions.
- G. Observations by Architect and Architect's Consultants: Periodic and occasional observations of Work in progress will be made by Architect and Architect's consultants as deemed necessary to review progress of Work and general conformance with the design intent.
- H. Limitations on Inspection, Test and Observations: Employment of an independent testing and inspection agency and observations by Architect and Architect's consultants shall not relieve Contractor of the obligation to perform Work in full conformance to all requirements of Contract Documents and applicable Building Code and other regulatory requirements.
- I. Rejection of Work: The University reserves the right to reject any and all Work not in conformance to the requirements of the Contract Documents.
- J. Correction of Non-Conforming Work: Non-conforming Work shall be modified, replaced, repaired or redone by the Contractor at no change in Contract Sum or Contract Time.
- K. Acceptance of Non-Conforming Work: Acceptance of non-conforming Work, without specific written acknowledgement and approval of the University's Representative, shall not relieve the Contractor of the obligation to correct such Work.
- L. Contract Adjustment for Non-conforming Work: Should University's Representative determine that it is not feasible or not in University's interest to require non-conforming Work to be repaired or replaced, an equitable reduction in Contract Sum shall be made by agreement between University's Representative and Contractor. If an equitable amount cannot be agreed upon, a Field Instruction will be issued and the amount in dispute resolved in accordance with applicable provisions of the Contract General Conditions.
- M. Non-Responsibility for Non-Conforming Work: Architect and Architect's consultants disclaim any and all responsibility for Work produced that is not in conformance with the Contract Drawings and Contract Specifications.
- N. Fabricator Qualifications: Firms shall be experienced in producing products similar to those indicated for this project and with a record of successful in-service performance as well as sufficient production capacity to produce required units.
- O. Installer Qualifications: Firms and individuals shall be experience in installing, erecting, or assembling QUALITY CONTROL

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work similar in material, design, and extent to that indicated for this project and with a record of successful in-service performance as well as sufficient production capacity to produce required units.

P. Professional Engineer Qualifications: Professional engineers shall be legally qualified to practice in jurisdiction where project is located and who is experience in providing engineering services of the kind indicated. Engineering service areis defined as those provided for installations of the system assembly, or product that are similar to those indicated for this project in material, design, and extent.

1.7 INSPECTIONS AND TESTS BY AUTHORITIES HAVING JURISDICTION

- A. Inspections and Tests by Authorities Having Jurisdiction: Contractor shall cause all tests and inspections required by authorities having jurisdiction to be made for Work under this Contract.
 - 1. Except as specifically noted, scheduling, coordinating and conducting such inspections and tests shall be solely the Contractor's responsibility.
 - 2. All time required for inspections and tests by authorities having jurisdiction shall be included in the Contract Time.
 - 3. Costs for inspections and tests by authorities having jurisdiction will be paid by University.
 - Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities.
 - 5. Specific tests, inspections and related actions do not limit Contractor's quality control procedures that facilitate compliance with the Contract Document requirements.
 - 6. Requirements for Contractor to provide quality control services required by the Trustees, Construction Administrator, Architect, or authorities having jurisdiction are not limited by provisions of this Section.

1.8 INSPECTIONS AND TESTS BY SERVING UTILITIES

- A. Inspections and Tests by Serving Utilities: Contractor shall cause all tests and inspections required by serving utilities to be made for Work under the Contract.
 - 1. Except as specifically noted, scheduling, coordinating and conducting such inspections and tests shall be solely the Contractor's responsibility. All time required for inspections and tests by serving utilities shall be included in the Contract Time.
 - Except as specifically noted, all costs for inspections and tests by serving utilities shall be included in the Contract Sum.

1.9 INSPECTIONS AND TESTS BY MANUFACTURER'S REPRESENTATIVES

- A. Inspections and Tests by Manufacturer's Representatives: Contractor shall cause all specified tests and inspections to be conducted by materials or systems manufacturers. Additionally, all tests and inspections required by materials or systems manufacturers as conditions of warranty or certification of Work shall be made, the cost of which shall be included in the Contract Sum.
 - 1. Scheduling, coordinating and conducting such inspections and tests shall be solely the Contractor's responsibility. All time required for inspections and tests by manufacturer's representatives shall be included in the Contract Time.

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2. All costs for inspections and tests by manufacturer's representatives shall be included in the Contract Sum.

1.10 INSPECTIONS BY INDEPENDENT TESTING AND INSPECTION AGENCY

A. Inspections by independent Testing Laboratory: Refer to Section 01458 - Testing Laboratory Services.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

Not applicable to this Section.

END OF SECTION

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SECTION 01455

MOCK-UPS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Full scale mock-ups for visual qualities.

1.3 RELATED SECTIONS

THE FOLLOWING ARE EXAMPLES ONLY. LIST SECTIONS APPLICABLE TO PROJECT, REQUIRING MOCK-UPS.

- A. Section 02751 Portland Cement Concrete Paving.
- B. Section 06410 Custom Casework.
- C. Section 06650 Solid Surfacing Fabrications.
- D. Section 07900 Joint Sealers.
- E. Section 09250 Gypsum Board.
- F. Section 09310 Ceramic Tile.
- G. Section 09650 Resilient Flooring.
- H. Section 09680 Sheet Carpet.
- I. Section 09905 Field Painting.
- J. Section 10260 Wall and Corner Protection.
- K. Section 15440 Plumbing Fixtures.
- L. Section [____] [_Exterior Cladding for water test____].
- M. Section [____] [____].
- N. Section [____] [____].
- 1.4 DEFINITIONS

- A. Mock-Ups: Full-size, physical example assemblies to illustrate finishes and materials.
 - 1. Mock-ups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples.
 - 2. Mock-ups establish the standard by which the Work will be judged.

1.5 SUBMITTALS

A. Product Data and Shop Drawings: For each product or system that will be incorporated in the mockups, submit required submittals as specified in applicable product Section of the Specifications.

1.6 QUALITY ASSURANCE

- A. Mock-Ups: Before installing portions of the Work requiring mock-ups, build mock-ups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Build mock-ups in location and of size indicated or, if not indicated, as directed by University's Representative.
 - 2. Notify University's Representative and Architect minimum of seven days in advance of dates and times when mock-ups will be constructed.
 - 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 - 4. Obtain review and acceptance of mock-ups by Architect and University's Representative before starting Work, including fabrication and installation construction.
 - 5. Maintain mock-ups during construction in an undisturbed condition as a standard for judging the completed Work.
 - 6. Demolish and remove mock-ups when directed, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MOCK-UPS FOR VISUAL QUALITIES

- A. Mock-Ups for Visual Qualities: Before installing portions of the Work requiring a mock-up, build the mock-ups with each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
 - 1. Construct field mock-ups as indicated on the Drawings, indicating assemblies and interfaces of materials.
 - 2. Construct mock-ups at location where directed by University's Representative.
 - 3. Demonstrate the proposed range of visual effects, qualities and workmanship.
 - 4. Provide structural substrate for mock-ups as suitable. Mock-ups shall be free standing and self-

supporting.

- 5. Maintain mock-ups during construction in an undisturbed condition as a standard for judging completed Work.
- 6. Demolish and legally dispose of mock-ups when directed, unless otherwise indicated.

PART 3 - EXECUTION

3.1 CONSTRUCTION OF MOCK-UPS FOR VISUAL QUALITIES

A. Mock-Ups for Visual Qualities, General: Construct mock-ups as noted on the Drawings and specified in individual product Sections of the Specifications, including the following:

THE FOLLOWING ARE EXAMPLES. EDIT TO SUIT PROJECT REQUIREMENTS.

- 1. Casework:
 - a. Typical base cabinet, plastic laminate countertop and wall cabinet, including ceiling and wall trim.
 - b. [_DESCRIPTION_].
- 2. Ceramic tile: Toilet room, floor and wall tile including:

- a. Intersections of floor-wall and wall-ceiling.
- b. Transition from wall tile finish to gypsum board finish (including wall covering, where applicable).
- c. Inside corner of tile covered wall.
- d. Shower curb.
- 3. [_DESCRIPTION_].
 - a. [_DESCRIPTION_].
 - b. [_DESCRIPTION_].
 - c. [_DESCRIPTION_].
- B. [_DESCRIPTION_] Room Mock-Ups:

THE FOLLOWING IS EXAMPLE TEXT ONLY. EDIT TO SUIT PROJECT REQUIREMENTS.

- 1. Construct mock-up where indicated on the Drawings or, if not indicated, where designated by University's Representative.
- 2. Construct wall and ceiling framing for gypsum board finish, gypsum board finish, paint, door frames and doors (with hardware), floor fill at Corridor door, floor coverings and base, wall coverings, dummy lighting fixtures, dummy electrical and signal outlets, dummy plumbing fixtures, casework and trim.

3. Remove, reconstruct and refinish products as necessary to achieve fit, finish and tolerances acceptable to University's Representative and Architect.

ADD ADDITIONAL PARAGRAPHS AS NECESSARY TO DESCRIBE MOCK-UPS.

END OF SECTION

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SECTION 01458

INSPECTION & TESTING SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements for quality control services.
 - 1. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, and governing authorities. They do not include Contract enforcement activities performed by the Trustees or Architect.
 - Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.

1.3 RELATED SECTIONS

- A. Section 01450 Quality Control: General requirements for inspections and tests.
- B. Individual Product Specifications Sections: Specific requirements for inspections and tests.

1.4 RESPONSIBILITIES

- A. Testing Laboratory: Trustees will engage and pay for the services of an independent agency to perform inspections and tests specified as the Trustees' responsibility.
 - Where the Trustees have engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Trustees, unless otherwise agreed in writing with the Trustees.
- B. Retesting: The Contractor is responsible for the cost of retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
 - 1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
- C. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested.

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- D. Coordination: The Contractor, Project Manager/Inspector, and each agency engaged to perform inspections, testing and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
 - 1. The Contractor is responsible for communicating to the Project Manager/Inspector the scheduling times for inspections, tests, taking samples and similar activities. See Section 1.5.B.
- E. Payment for Testing Laboratory Services:
 - Unless otherwise specified, Trustees will pay for tests and inspections performed by Testing Laboratory, as specified in individual product Sections of the Specifications. Overtime costs due to scheduling for the convenience of the Contractor or to make up for Work behind schedule shall be deducted by Change Order from Contract Sum.
 - 2. When tests and inspections are required on an overtime basis, initial payment will be made by the Trustees. All costs for overtime testing and inspections shall be deducted by Change Order from Contract Sum.
 - 3. Unless otherwise specified, Contractor shall be back-charged for mileage and travel time for inspection services requiring more than 60 miles from Project site to test products purchased by Contractor.
 - a. Testing laboratory shall forward all billings and records of such costs to University's Representative for approval.
 - b. Such costs, if determined by University's Representative to be attributable to the Contractor under this provision, shall be deducted by Change Order from Contract Sum.
 - Contractor shall pay all costs for repeated observations, reinspection or retesting by Testing Laboratory due to non-conforming Work. Costs shall be deducted by Change Order from Contract Sum.
 - Additional Tests, Inspections and Related Services: Contractor shall be charged costs for additional tests, inspections and related services, due to the following. Such costs shall be deducted by Change Order from Contract Sum.
 - a. Work is not ready to inspect when inspectors arrive.
 - b. Failure to properly schedule or notify testing and inspection agency or authorities having jurisdiction.
 - c. Changes in sources, lots or suppliers of products after original tests or inspections.
 - d. Changes in means methods, techniques, sequences and procedures of construction that necessitate additional testing, inspection and related services.
 - e. Changes in mix designs for concrete and mortar after review and acceptance of submitted mix design.
 - f. Coordination time for mMultiple off-site fabrication sites.
 - g. Fabrication and installation errors.
 - h. Inefficient, sporadic, or poorly organized manufacturing that causes additional testing costs to be incurred.
- F. Segregation in Billing of Overtime Services: Billings for overtime services shall have straight time and overtime costs segregated and shall have substantiation by detailed explanations justifying necessity of services on overtime basis.

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- G. Obligation to Perform Work According to Contract Documents: Employment of Testing Laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents and applicable Codes.
- H. Limits on Testing Laboratory's Authority:
 - 1. Testing Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Testing Laboratory may not approve or accept any portion of the Work.
 - 3. Testing Laboratory may not assume any duties of Contractor.
 - 4. Testing Laboratory shall have no authority to stop Work.
- I. Contractor's Responsibilities to Testing Laboratory: Contractor shall make the Work in all stages of progress available for personal and continuous observation by the Testing Laboratory.
 - 1. Testing Laboratory shall have free access to any and all parts of the Work at all times.
 - Contractor shall provide the Testing Laboratory with reasonable facilities for Testing Laboratory to
 obtain such information as Testing Laboratory determines is necessary for Testing Laboratory to
 be kept fully informed of the progress and manner of performance of the Work and character of
 products, according to Testing Laboratory's duties and responsibilities.
 - 3. Observation and inspection of the Work by Testing Laboratory shall not relieve Contractor from any obligation to fulfill the requirements of the Contract.
- J. Retesting: When materials tested fall to meet requirements herein specified, they shall be promptly corrected or removed and replaced and retested in a manner required by University's Representative. Costs involved in retesting shall be deducted by Change Order from Contract Sum.

1.5 TESTS AND INSPECTIONS

- A. Tests and Inspections, General: All construction work shall be subject to inspection by the Trustees and the Architect and all such construction or work shall remain accessible and exposed for inspection purposes until approved by the Trustees.
 - 1. The Trustees will provide project personnel, including inspectors, to be available at the project site.
 - Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of the building code or of other ordinances of the jurisdiction, including plans and specifications. Inspections presuming to give authority to violate or cancel the provisions of code, or of plans and specifications shall not be valid.
 - It shall be the duty of the contractor to cause the work to remain accessible and exposed for inspection purposes. Neither the Inspector nor the Trustees or Architect shall be liable for expense entailed in the removal or replacement of any material required to allow inspection.
- B. Inspection Requests: It shall be the duty of the Contractor doing the work to notify the Inspector that

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such work is ready for inspection. The Trustees require that such work is ready for inspection. The Trustees require that every request for inspection be filed at least two working days (48 hours) before such inspection is desired. Such requests shall be in writing thought one of two web-based electronic systems. The process will be determined by the University representative based on the project requirements.

- An IRF (Inspection Request Form) is generated by the project contractor and sent to <u>inspections@csusm.edu</u>. The IRF will be printed and the appointment will be scheduled with the IOR or the Special Inspector.
- 2. The IRF will be generated through Prolog Electronic Project Management system,
- 2.3. Inspection requests are not guaranteed once submitted by the Contractor. Inspections will be coordinated by the University with any additional inspection requests submitted by other contractors. Every effort will be made to schedule inspections as requested. The Contractor is encouraged to submit requests early to receive priority in scheduling.
- C. Approval Required: Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the Inspector. The Inspector, upon notification, shall make the requested inspections and shall either indicate in writing that portion of the construction is satisfactory as completed, or shall notify the Contractor that same fails to comply with plans and specifications. Any portions of Work that do not comply shall be corrected by the Contractor, and such portion shall not be covered or concealed until authorized by the Inspector.
 - 1. There shall be a final inspection and approval of all buildings and structures when completed and ready for occupancy and use.
- D. Inspection Coordination: Contractor shall provide, on a weekly basis, an anticipated Inspection Requirements Schedule, coordinated with the three-week look ahead schedule, showing the anticipated inspection needs for the following three weeks to facilitate appropriate campus coordination and interface as well as mobilization of required inspection staffing.
- E. Required Inspections: Reinforcing steel, structural framework, or interior wall and/or ceiling support framing of any part of any building or structure shall not be covered or concealed without first obtaining the approval of the Inspector.
 - 1. Listed below are the minimum inspection requirements:
 - a. Frame Inspection: To be made after all framing, fire blocking and bracing are in place and all pipes and vents are complete and the rough electrical, plumbing and heating wires, pipes and ducts are approved.
 - b. Mechanical and Electrical Rough-In Inspection: To be made after all mechanical and electrical rough-in work is completed.
 - c. Lath or Gypsum Board Inspection: To be made after all lathing and gypsum board, interior and exterior, is in place, but before any plastering is applied or before gypsum board joints and fasteners are taped and finished.
 - d. Final Inspection: To be made when the building is completed and ready for occupancy.
 - e. Other Inspections: In addition to the called inspections specified above, the inspector may make or require other inspections of any construction work to ascertain compliance with the provisions of the plans and specifications.
 - f. Re-inspections: A re-inspection fee may be assessed for each inspection or re-inspection when such portion of work for which inspection is called is not complete or when corrections called for are not made.

(ARCHITECT TO REVISE/ ADD TO LIST AS REQUIRED BY PROJECT TECHNICAL DETAILS)

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- g. Footings
- h. Underground utilities
- i. Rebar
- j. Fire sprinklers.
- k. Ceiling above t-bar
- I. Welding
- m. Roof/metal deck
- n. Roofing
- o. Insulation
- p. Rated wall penetrations
- q. Rated doors and access panels
- r. High voltage cable installation
- s. High pot high voltage cables
- 2. The Contractor shall be responsible for reviewing all of the Contract Documents for any additional inspection requirements.

3. Contractor to maintain and provide to the Inspector on the jobsite during an inspection, all approved submittals, RFI responses, ASI documents and any information required for inspection and confirmation of compliance to the contract documents, for the related work to be approved.

1.6 SUBMITTALS

- A. Reports: Trustees' independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Architect (two copies), the Trustees, the Contractor (two copies), and the Project Manager/ Inspector.
- B. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:

Date of issue Project title and number Name, address and telephone number of testing agency Dates and locations of samples and tests or inspections Names of individuals making the inspection or test Designation of the Work and test method Identification of product and Specification Section Complete inspection or test data Test results and an interpretation of test results Ambient conditions at the time of sample-taking and testing Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements Name and signature of laboratory inspector Recommendations on retesting.

1.7 SCHEDULES FOR TESTING

A. Testing and Inspection Schedule: After discussion with University's Representative and Testing Laboratory in advance of performance of testing and inspection services, Contractor shall determine dates and times necessary for Testing Laboratory to schedule performance of required tests and inspections and determine due dates for issuance of reports.

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- Integrate Testing and Inspection Schedule with Construction Progress Schedule. specified in Section XXXXX - Construction Progress Schedules.
- 2. Determine and indicate in Testing and Inspection Schedule necessary time for preparation and submission of reports of tests and inspections.
- B. Revising Testing and Inspection Schedule: When changes of the construction schedule are necessary during construction, coordinate all such changes of schedule with the testing laboratory as required.
- C. Adherence to Testing and Inspection Schedule: When the Testing Laboratory is ready to test according to the determined schedule but is prevented from testing or taking specimens due to incompleteness of the work, all extra costs for testing attributed to the delay may be back-charged to the Contractor and shall not be borne by the University.

1.8 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor's Responsibilities for Inspections and Tests:
 - 1. Notify Project Inspector and Testing Laboratory two working days in advance of expected time for operations requiring inspection and testing services.
 - 2. Deliver to Testing Laboratory or designated location, adequate samples of materials proposed to be used which require advance testing, together with proposed mix designs.
 - Cooperate with University's Representative, Testing Laboratory, Project Inspector, Architect, Architect's consultants and other responsible design professionals. Provide access to Work areas and off-site fabrication and assembly locations, including during weekends and after normal work hours.
 - 4. Provide incidental labor and facilities to provide safe access to Work to be inspected and tested, to obtain and handle samples at the Work site or at source of products to be tested, and to store and cure test samples.
 - 5. Provide at least 15 days in advance of first inspection or test of each type, a schedule of tests or inspections indicating types of tests or inspections and their scheduled dates.
 - 6. Provide two working days notice to University's Representative, Architect and, as applicable, responsible design consultant, of each test and inspection.

1.9 INSPECTIONS TESTS BY OTHERS

- A. Inspections by Others: Refer to Section 01450 Quality Control for requirements regarding observations and inspections by University's Representative, Architect and Project Inspector.
- B. Tests by Others: Refer to Section 01450 Quality Control and individual product Specifications Sections for requirements regarding tests and inspections by product manufacturers and others, including serving utilities.

PART 2 - PRODUCTS

INSPECTION & TESTING SERVICES 01458-6 The California State University San Marcos Project Name here Project No. SM – XXXX Date

NOT FOR USE WITHOUT EDITING

Not Applicable to this Section.

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

- A. Repair and Protection: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."
 - 1. Protect construction exposed by or for quality control service activities, and protect repaired construction.
 - 2. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION

INSPECTION & TESTING SERVICES 01458-7

SECTION 01510

TEMPORARY UTILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Temporary utilities and services, including:
 - 1. Heating and cooling during construction
 - 2. Ventilation during construction
 - 3. Temporary water service
 - 4. Temporary sanitary facilities
 - 5. Temporary power and lighting
 - 6. Construction telephone and data service.
- B. Removal of temporary utilities.

1.3 RELATED SECTIONS

A. Section 01100 - Summary of the Work: Contractor's use of site and premises.

1.4 SUBMITTALS

A. Temporary Utilities: Submit reports of tests, inspections, applicable meter readings and similar procedures performed on temporary utilities.

1.5 TEMPORARY UTILITIES AND SERVICES

CHECK FOR PROJECT SPECIFIC REQUIREMENT

- A. Temporary Utilities and Services, General: All utilities and other services necessary for proper performance of the Work shall be provided by Contractor, unless specifically noted otherwise. Refer to Contract General Conditions, Article 4.11. Temporary utilities and services shall conform to all applicable requirements of authorities having jurisdiction and serving utility companies and agencies, including the following:
 - 1. Requirements of authorities having jurisdiction, including:
 - a. Cal OSHA
 - b. California Building Code (CBC) requirements
 - c. Health and safety regulations

- d. Utility agency and company regulations
- e. Police, Fire Department and Rescue Squad rules
- f. Environmental protection regulations
- 2. Standards:
 - a. NFPA Document 241 Building Construction and Demolition Activities.
 - b. ANSI A10 Series Safety Requirements for Construction and Demolition.
 - c. NECA Electrical Design Library Temporary Electrical Facilities.
 - d. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with California Electrical Code (CEC).
- B. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.
- C. Temporary Connections and Fees: Contractor shall arrange for services and pay all fees and service charges for temporary power, water, sewer, gas and other utility services necessary for the Work.
 - 1. Contractor shall apply for and obtain permits for temporary utilities, including permits for temporary generators, from authorities having jurisdiction.
 - 2. All costs for temporary connections, including fees charged by serving utilities, shall be included in Contract Sum.
- D. Permanent Connections and Fees: Contractor shall arrange for utility agencies and companies to make permanent connections. University will arrange for permanent utility account and pay permanent connection fees. After Contract Completion review and determination that Work is acceptable, University will pay utility service charges for services delivered through permanent connections, for normal quantities.
- E. Use of Temporary Utilities: Enforce strict discipline in use of temporary utilities to conserve on consumption. Limit use of temporary utilities to essential and intended uses to minimize waste and abuse.

1.6 **PROJECT CONDITIONS**

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on the site.

1.7 HEATING AND COOLING

- A. Temporary Heating and Cooling: Provide and pay for temporary heating and cooling devices, fuel and related service charges to provide ambient temperatures as required to maintain conditions necessary for proper performance of construction activities.
- B. Use of Permanent Heating and Cooling Systems: Permanent heating and cooling equipment may be used after completion, testing and inspection of systems and approval of code authorities having jurisdiction.
 - 1. Prior to operation of permanent heating equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place.

- 2. Contractor shall provide and pay for operation, maintenance and regular replacement of filters and worn or consumed parts.
- 3. Immediately prior to Contract Completion review, change disposable filters and clean permanent filters of equipment used during construction.
- C. Temperature Criteria: Maintain interior ambient temperature of minimum 50 degrees F and maximum 80 degrees F, unless otherwise specified or approved by University's Representative.

1.8 VENTILATION DURING CONSTRUCTION

- A. Ventilation During Construction: Provide and pay for temporary ventilation devices, energy and related service charges.
- B. Use of Permanent Ventilation Systems: The University reserves the right to use permanent ventilation equipment after completion, testing and inspection of systems and approval by University's Representative and authorities having jurisdiction.
 - 1. Prior to operation of permanent ventilation equipment for ventilation purposes during construction, Contractor shall verify that equipment is lubricated and filters are in place.
 - 2. Contractor shall provide and pay for maintenance and regular replacement of filters and worn or consumed parts of permanent ventilation system using for ventilation during construction.
 - 3. Immediately prior to Contract Completion review, Contractor shall change disposable filters and clean permanent filters of equipment used during construction.
- C. Ventilation Criteria: Ventilate enclosed areas to assist cure of materials, to dissipate humidity and to prevent accumulation of dust, fumes, vapors and gases, as necessary for proper performance of the Work.

1.9 TEMPORARY WATER SERVICE

- A. Temporary Water Service: Contractor shall locate and connect to existing water source for temporary construction water service. Contractor shall comply with the following:
 - 1. Locate and connect to existing water source for temporary construction water service, as acceptable to University's Representative.
 - 2. Extend branch piping with outlets located, so that water is available by use of hoses.
 - 3. Temporary water service piping, valves, fittings and meters shall comply with requirements of the serving water utility and California Plumbing Code (CPC).
 - 4. All costs to establish temporary construction water system shall be included in the Contract Sum, of if so specified, costs shall be paid from Allowance specified in Section 01210 Allowance Procedures.
- B. Use of Permanent Water System: Permanent water system may be used for construction water after completion, sterilization, testing and inspection of system and approval by University's Representative and authorities having jurisdiction.

1.10 TEMPORARY SANITARY FACILITIES

- A. Temporary Sanitary Facilities: Provide and maintain adequate temporary sanitary facilities and enclosures for use by construction personnel.
 - 1. Number of temporary toilets shall be suitable for number of workers.
 - 2. Provide wash-up sink with soap, towels and waste disposal.
- B. Use of Permanent Sanitary Facilities: Do not use permanent sanitary facilities unless approved by University's Representative. Immediately prior to Contract Completion review, thoroughly clean and sanitize permanent sanitary facilities used during construction.

1.11 TEMPORARY POWER AND LIGHTING

- A. Temporary Power and Lighting, General: Comply with NECA Electrical Design Library Temporary Electrical Facilities.
- B. Temporary Power: Provide electric service as required for construction operations, with branch wiring and distribution boxes located to provide electrical service for performance of the Work.
 - 1. Provide temporary electric feeder connected to electric utility service at location determined by Contractor and as approved by serving electric utility.
 - 2. Temporary power conduit, raceways, fittings, conductors, panels, connections, disconnects, overcurrent protection, outlets and meters shall comply with requirements of the serving electric utility, California Electrical Code (CEC) and requirements of authorities having jurisdiction.
 - Contractor shall pay all costs to establish temporary electric service, or if so specified, costs of temporary power shall be paid from Allowance specified in Section 01210 - Allowance Procedures.
 - 4. As necessary in order to maintain construction progress, Contractor shall provide and pay all costs associated with generators used for temporary power.
- C. Temporary Lighting: Provide temporary lighting as necessary for proper performance of construction activities and for inspection of the Work.
 - 1. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
 - 2. Maintain lighting and provide routine repairs.
- D. Protection: Provide weatherproof enclosures for power and lighting components as necessary. Provide overcurrent and ground-fault circuit protection, branch wiring and distribution boxes located to allow convenient and safe service about site of the Work. Provide flexible power cords as required.
- E. Use of Permanent Power and Lighting Systems: Permanent power and lighting systems may be used after completion, testing and inspection of systems and approval by University's Representative and authorities having jurisdiction.
 - 1. Contractor shall maintain lighting and make routine repairs and replacements as necessary.
 - 2. University will pay for reasonable amounts of electricity consumed after permanent power system

is operational and approved by authorities having jurisdiction. University shall not pay for the cost of wasted electricity, for example, lighting beyond hours of construction.

- F. Service Disruptions: When necessary for energizing and de-energizing temporary electric power systems, minimize disruption of service to those served by public mains. Schedule transfers at times convenient to University and to occupants.
- G. Relamping: For permanent lighting used during construction, relamp all fixtures immediately prior to Contract Completion (punch list) review.

1.12 CONSTRUCTION TELEPHONE SERVICE

- A. Construction Telephone Service: Provide telephone service to Contractor's field staff by means of cellular telephones, pagers and NEXTEL radio service, to enable communications between University's Representative, Project Inspector and Contractor.
 - 1. Include voice message service and paging services.
 - 2. All costs of construction telephone, paging and radio services shall be included in Contract Sum.

1.3 TEMPORARY UTILITY FEES

- A. Temporary Utility Fees: Contractor shall reimburse the University for temporary utility cost as follows:
 - 3. Water XXX dollars (\$XX.00) per month (or specify flat project rate)
 - 4. Electricity XXX dollars (\$XX.00) per month (or specify flat project rate)
 - 3. Telephone XXX dollars (\$XX.00) per month (or specify flat project rate)
 - 4. Data XXX dollars (\$XX.00) per month (or specify flat project rate)

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Materials: Contractor shall provide new materials. If acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials that are suitable for the use intended. Their use and methods of installation shall not create unsafe conditions or violate requirements of applicable codes and standards.
- B. Equipment: Contractor shall provide new equipment; or, if acceptable to the Trustees, Contractor may provide undamaged, previously used equipment in serviceable condition. Provide equipment that is suitable for use intended.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITIES INSTALLATION

- A. Temporary Utilities Installation, General: Contractor shall engage the appropriate local utility company or personnel to install temporary service or connect to existing service.
 - 1. Use Charges: Cost or use charges for temporary facilities are the Contractor's responsibility.

- 2. Allowance for Utilities Charges: When Contract includes an allowance for metering of utility services, whether through temporary or permanent facilities, unused amount shall be returned to the Trustees by deductive change order.
- B. Water Service: Contractor may use water from the University's systems in such quantities and at such times as they are available. If this is done, Contractor shall provide all temporary materials necessary to extending the utility to where they will be used. Contractor shall install a meter and reimburse the University for any water used.
- C. Temporary Electric Power Service: Contractor may use electricity from the University's system if available. If this is done, Contractor shall provide all equipment, including connections, and other materials necessary for extending the utility lines to where they will be used. Contractor shall coordinate the installation with the University's Representative. Contractor shall install a meter and reimburse the University for any power used. Where sub-metering is not possible or practical, a flat fee may be established and paid to the University.
 - 1. When not available from the University, the Contractor must arrange and pay for electric service through the local utility or furnish his own portable power.
 - 2. All permanent power used by the Contractor prior to Occupancy by the Trustees shall be metered and paid for by the Contractor.
- D. Temporary Telephones: Contractor shall have telephone facility available at its business office for the duration of contract where the Contractor and its superintendent may be contacted. A pay phone for use of subcontractors is recommended.
- E. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, Contractor shall install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Contractor shall comply with NFPA 10 "Standard for Portable Fire Extinguishers," and NFPA 241 "Standard for Safeguarding Construction, Alterations and Demolition Operations." Contractor shall:
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
 - 2. Store combustible materials in containers in fire-safe locations.
 - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
 - 4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- F. Maintenance of Temporary Utilities and Services: Contractor shall maintain temporary utilities and services in good operating condition until removal. Contractor shall protect from utilities and services from environmental and physical damage.

3.2 TERMINATION AND REMOVAL OF TEMPORARY UTILITIES AND SERVICES

A. Termination and Removal of Temporary Utilities and Services: Unless the Trustees require that it be maintained longer, Contractor shall remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Completion. Contractor shall

complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. At Completion, Contractor shall clean and renovate permanent facilities that have been used during the construction period.

- B. Removal of Temporary Underground Utilities and Restoration: Remove temporary underground utility installations to a minimum depth of two-feet below utility services. Contractor shall:
 - 1. Backfill, compact and regrade site as necessary to restore areas or to prepare for indicated paving and landscaping.
 - Restore paving damaged by temporary utilities. Refer to requirements specified in Section 01732

 Cutting and Patching Requirements.
- C. Cleaning and Repairs: Contractor shall clean exposed surfaces and repair damage caused by installation and use of temporary utilities and services. Where determined by University's Representative that repair of damage is unsatisfactory, Work, Contractor shall replace construction with matching finishes. Refer to requirements specified in Section 01732 Cutting and Patching Requirements.

END OF SECTION

SECTION 01520

CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Field offices and sheds.
- B. Removal of construction facilities.

1.3 RELATED SECTIONS

- A. Section 01100 Summary of the Work: Contractor's use of site and premises.
- B. Section 01510 Temporary Utilities: Water, power and telephone services to construction facilities.
- C. Section 01525 Construction Staging Areas: Locations for field offices and sheds.
- D. Section 01740 Cleaning Requirements: Cleaning during construction and final cleaning.

1.4 MAINTENANCE OF CONSTRUCTION FACILITIES CONTROLS

- A. Maintenance: Contractor shall use all means necessary to maintain construction facilities in proper and safe condition throughout progress of the Work.
- B. Replacement: In the event of loss or damage, Contractor shall promptly restore temporary construction facilities by repair or replacement at no change in the Contract Sum or Contract Time.

1.5 CONTRACTOR'S FIELD OFFICES AND SHEDS

- A. Contractor's Field Office: Contractor shall provide a mobile field office of weather-tight construction, with lighting, power, ventilation, heating and cooling to house Contractor. Unless otherwise indicated on the Drawings, Contractor shall locate field office at in staging area described in Section 01525 Construction Staging Areas. Contractor shall comply with University's requirements transmitted through University's Representative.
 - 1. Contractor shall provide temporary utilities to serve Contractor's field office. Refer to Section 01510 Temporary Utilities.
 - 2. Contractor's Field Office shall present neat, business-like appearance at all times, internally and externally.
 - 3. Contractor shall ensure that neither Contractor's Field Office nor other jobsite facilities are used for living quarters.

- B. Storage Sheds for Tools, Materials, and Equipment: Contractor shall provide weather-tight sheds, all with the following:
 - 1. Heat and ventilation appropriate for storage of products requiring controlled conditions,
 - 2. Adequate space for organized storage and access, and
 - 3. Lighting for inspection of stored materials.
- C. Layout of Field Offices and Sheds: Within five working days of the Notice to Proceed, Contractor shall submit to University's Representative a proposed layout for field offices, sheds and storage areas. University's Representative will review and respond within five working days with comments and directions. Contractor shall comply with directions of University's Representative.

THE FOLLOWING ARE SAMPLE SPECIFICATIONS ;EDIT TO SUIT PROJECT REQUIREMENTS. – EDIT 1.6 SECTION or OMIT

1.6 UNIVERSITY'S CONSTRUCTION MANAGEMENT FIELD OFFICE

- A. General: Contractor shall provide (and Contract Sum shall include) a field office for exclusive use by University's Construction Management team for the duration of the Contract, equipped and furnished as specified below.
 - 1. Contractor shall pay for all temporary water and power services, in accordance with Section 01510 Temporary Utilities.
 - 2. Contractor shall provide and pay for twice weekly cleaning services, including trash removal and restocking of toilet facility consumables. Contractor shall provide and pay for emptying sewage holding tank and related services on an as-needed basis, but not less frequently than each week.
 - 3. Contractor's initial progress payment for Work under the Contract will not be approved until University's Construction Management Field Office is fully equipped and functional.
 - 4. Unless otherwise directed in writing by University's Representative, University's Construction Management Field Office, including furnishings and equipment provided by Contractor, shall remain operational until (XXX) days after execution or recording of Notice of Completion.
 - 5. With 14 days of written direction by University's Representative or within (XXX) days of execution or recording of Notice of Completion, whichever is earliest, Contractor shall take possession and remove University's Construction Management Field Office from the campus.
 - 6. University's representatives shall have the right to use University's Construction Management Field Office, including furnishings and equipment, for the purpose of construction contract administration, testing and inspection for Work under this and any other contract, or other University business, at no change in Contract Sum and Contract Time.
- B. Construction: Contractor shall provide (and Contract Sum shall include) the following:
 - 1. Field office of pre-fabricated, weather-tight construction, approximately 12 feet wide by 60 feet long, with lockable entrances, operable windows and serviceable finishes. Set field office on

foundations suitable for normal office loadings, with tie-downs to resist wind and seismic forces. Provide field office of non-combustible construction where located within 30 feet of building lines. Comply with NFPA 241.

- 2. Field office with two exit doors, with cylinder locks and latch guards.
- 3. Within field office, provide the following rooms:
 - a. Two private offices, approximately 120 square feet each, at each end of building.
 - b. Conference room of minimum 400 square feet.
- 4. Private toilet facilities, complete with water closet, lavatory with hot and cold running water, medicine cabinet with mirror and dispensers for toilet paper and paper towels.
- 5. Each private office and conference room with operable windows, at least one on each side, equipped with blinds, insect screens and protective burglar bars.
- 6. All plumbing, HVAC, power, lighting systems and telecommunications wiring and outlets as necessary for complete and habitable use.
- 7. Properly configured, NEMA-polarized electrical outlets which prevent insertion of 110- to 120-volt plugs into higher-voltage outlets. Equip outlets with ground-fault circuit interrupters (GFCI), having reset button and pilot light.
- 8. Ceiling-mounted fluorescent lighting fixtures, capable of providing uniform lighting of minimum 60 lumens at level 30-inches above floor.
- 9. Central heating, ventilation and air conditioning (HVAC) by thermostatically-controlled heat pump system and ducting, sufficient to maintain comfortable conditions during all normally-anticipated weather conditions.
- C. Furnishings: Contractor shall provide (and Contract Sum shall include) the following furnishings. At Contract close-out, University shall have option to purchase furnishings at depreciated, fair-market value negotiated with Contractor.
 - 1. Door mats: One per entrance, heavy-duty cocoa mat suitable for heavy use and removal of dirt and mud.
 - 2. Coat rack: Wall mounted tubular steel, with shelf and hanging rod with twelve hangers.
 - 3. Folding tables: Four each 36-inches by 72-inches and two each 30-inches by 72-inches, heavy duty, with wood grain plastic laminate top.
 - 4. Folding chairs: Twelve each, heavy duty, with padded seats.
 - 5. Desks, per office: One each, 36-inches by 72-inches, double pedestal, painted steel with resilient writing surface top, with computer keyboard drawer.
 - 6. Desk chairs, per desk: One each, ergonomic design, heavy duty, wheeled pedestals, with adjustable back angle, seat angle and arm height.
 - 7. File cabinets: Four 4-drawer, legal-size vertical file cabinets, with lockable drawers.

- 8. Bookcases: Four each, 84-inches high by 36-inches wide by 13-inches deep, painted steel, with five adjustable shelves.
- 9. Plan racks: Two each, factory-manufactured mobile stand by PlanHold or equal, with 24 removable drawing clamps each.
- 10. Plan tables: Field-fabricated by Contractor, with top constructed from 35-inch by 84-inch solid core, 1-3/8 inch thick with tempered hardboard faces, and wood or steel support structure, located where directed by University's Representative.
- 11. Markerboards: Four each, 36-inches wide by 48-inches high, with white markerboard suitable for oil- or water-base markers.
- 12. Tackboards: Four each, 36-inches wide by 48-inches high, with wood fiberboard core and burlap grain vinyl facing, color as selected by University's Representative.
- 13. Metal finish color: For metal furniture, standard putty color.
- D. Equipment: Contractor shall provide (and Contract Sum shall include) the following equipment. University shall be permitted to remove any equipment from field office and use elsewhere. All equipment shall be new and no substitutions or deviations from specified descriptions will be acceptable. Equipment will be returned by University prior to Contract close-out. At Contract closeout, University shall have option to purchase equipment at depreciated, fair-market value negotiated with Contractor.
 - 1. Fire extinguisher: Portable, UL-listed and labeled, complying with NFPA 10 and NFPA 241 for classification, extinguishing agent and size as necessary for location and class of fire exposure, minimum UL Rating 4A-60BC (nominal 10 pound capacity).
 - 2. Drinking water: Containerized, hot and chilled water tap-dispenser with paper cup dispenser, with bottled water units and paper cup supply as necessary. Contractor shall provide (and Contract Sum shall include) weekly restocking of water and paper cups.
 - 3. Refrigerator: Minimum 3.2 cubic feet capacity, compact refrigerator with internal freezer compartment, white color.
 - 4. Microwave oven: Countertop design, white color.
 - 5. Coffee maker: Two each, 12-cup capacity.
 - 6. Copy machine: Mounted on mobile cabinet, black and white xerographic copier for copies up to 11-inches by 17-inches, with reduction and enlargement capability, automatic document feeder, and collator (sorter). Copy machine shall include all services and consumables, including toner and paper, for duration of the Contact.
 - 7. Color printer/FAX/copier: Two each, to be located in private offices, as manufactured by Hewlett-Packard, H-P OfficeJet Model G85 or current equivalent model, 3-year manufacturer's "Next Day Exchange" warranty, with black and tri-color ink cartridges. Contractor shall provide all consumables, including inkjet-suitable paper, for duration of Contract. Printer/fax/copier shall connect to personal computer and service printer for computer as well as fax machine and copier.

- 8. Color printer: One each, manufactured by Hewlett-Packard, with black ink and tri-color ink cartridges, up to 11-inch by 17-inch output, network capable, photo capable. Provide all consumables for duration of Contract, including paper and ink.
- Personal computers (PCs) and accessories: Two each complete systems, including software, Dell "Latitude C800" notebook PC, catalog no. 25RC956904 or current equivalent model. Minimum components and features:
 - a. CPU: Minimum Pentium III processor, 1 GHz.
 - b. Display: 15.0-inch UXGA display (220-9551).
 - c. Memory: Minimum 256 mb SDRAM, 1 DIMM (313-0640).
 - d. Video: M4 video card with 32 MB video RAM (320-3025).
 - e. Floppy disk drive: 3-1/2 inch, 1.4 MB.
 - f. Hard disk drive: Minimum 32 GB, 12.5 MM, LAT (340-6332).
 - g. Removable storage: 250 MB ZipDrive (340-7935).
 - h. Secondary battery: LI-ION Lithium Battery (340-7935).
 - i. Modem: Internal 3Com MINI-PCI NIC/Modem Combo (313-7108).
 - j. Mouse: Microsoft IntelliMouse, two-button, gray, PS2 6-pin (310-5568).
 - k. Module bay: 24X max./10X min. CD-ROM Drive (3132-0249).
 - I. Fixed optical device: Internal 8X DVD iwht Software MPEGII (313-2667).
 - m. Carrying case: Leather Carrying Case (310-6532).
 - n. Docking station: C/Dock II Expansion Station (310-4564).
 - o. Monitor: 21-inch, (19.8-inch viewable), Dell P1110 Monitor, gray (320-3208).
 - p. External keyboard: Dell Grey Performance Win95 Keyboard (310-5101).
 - q. Hardware support service: 3-years, Next Business Day Parts and Labor with Complete Care, IGS (902-4920) (902-4922).
 - r. Operating system: Microsoft Windows 2000, latest Service Pack.
 - s. File system: NTFS File System for Windows NT/Windows 2000 (420-0153).
 - t. Other software programs: By University.
- 10. Telecommunications:
 - a. Provide four telephone lines, connected to campus telephone system.
 - b. Provide T1 data line, connected to campus system.
 - c. Provide three Nextel DirectConnect mobile phone systems, complete with instruments and chargers.
- 11. Digital still camera and accessories: One complete system, Nikon CoolPix 990, Nikon product no. 25045 or current equivalent model by Nikon, with case and all standard features and the following:
 - a. Wide-angle converter lens WC-E63, no. 25104.
 - b. 2X Teleconverter lens TC-E2, no. 25102.
 - c. Two each AC Adapter Battery Charger EH-21, no. 25149.
 - d. Three each Li-Ion Rechargeable Battery EN-EL1, no. 25153.
 - e. AC Adapter EH-31, no. 25148.
 - f. Four each 256 MB memory cards.
 - g. USB CompactFlash Card Reader, no. 25111.
- 12. Digital video camera and accessories: One complete system, Sony Mini DV Handycam digital camcorder No. DCR-PC110 or current equivalent model by Sony, with case and all standard features and accessories and the following:
 - a. Two each 64 MB Memory Stick storage module No. MSA-64A.
 - b. Memory Stick PC Card Adapter No. MSAC-PC2.
 - c. Memory Stick Floppy Disk Adapter No. MSAC-FD2MA.

- d. Two each AC Adapter Battery Charger No. AC-VQ800/DC-VQ800.
- e. Three each InfoLithium Rechargeable Battery No. NP-FM50/70/91.
- 13. Television: 27-inch color television with built-in DVD and VHS players.
- E. Miscellaneous: Contractor shall provide (and Contract Sum shall include) the following. University shall be permitted to remove any miscellaneous products from field office and for use elsewhere. All miscellaneous products shall be new and will be returned by University prior to Contract close-out. At Contract close-out, University shall have option to purchase miscellaneous products at depreciated, fair-market value negotiated with Contractor.
 - 1. Flashlights: Two each, MagLite tubular aluminum flashlights, for three D-size batteries. Include replacement batteries.
 - 2. Hardhats: Ten each, Class B hardhats, Fibre-Metal or equal.
 - 3. First Aid Supplies: Comply with industrial safety regulations.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

3.1 INSTALLATION OF CONSTRUCTION FACILITIES

- A. Layout of Field Offices and Sheds: Within five working days of the Notice to Proceed, Contractor shall submit to University's Representative a proposed layout for field offices, sheds and storage areas. University's Representative will review and respond within five working days with comments and directions. Contractor shall comply with directions of University's Representative.
 - 1. Coordinate with requirements specified in Section 01525 Construction Staging Areas.
 - 2. Coordinate installation of construction fencing as specified in Section 01560 Temporary Barriers and Enclosures.
- B. Installation of University's Construction Management Field Office: Provide field office ready for use within 20 working days of commencement date stated in Notice to Proceed or Notice of Award, whichever is earliest.

3.2 REMOVAL OF CONSTRUCTION FACILITIES

- A. Removal of Construction Facilities: Unless otherwise mutually agreed by University's Representative and Contractor, remove temporary materials, equipment, services, and construction prior to Contract Completion review.
 - Coordinate removal with requirements specified in Section 01510 Temporary Utilities, Section 01520 - Construction Facilities, Section 01550 - Vehicular Access and Parking and Section 01560 - Temporary Barriers and Enclosures.
 - 2. Completely remove in-ground construction facilities to minimum depth of two feet. Backfill, compact and regrade site as necessary to restore areas or to prepare for indicated paving and

The California State University San Marcos Project Name here Project No. SM – XXXX Date

landscaping.

B. Cleaning and Repairs: Clean and repair damage caused by installation or use of temporary construction facilities on public and private rights-of-way.

END OF SECTION

SECTION 01524

CONSTRUCTION WASTE MANAGEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Administrative and procedural requirements for the following:
 - 1. Salvaging nonhazardous demolition and construction waste.
 - 2. Recycling nonhazardous demolition and construction waste.
 - 3. Disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.
- F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Develop waste management plan that results in end-of-Project rates for salvage/recycling of 75 percent by weight of total waste generated by the Work.
- B. Salvage/Recycle Requirements: Salvage and recycle as much nonhazardous demolition and construction waste as possible including the following materials:
- C. Salvage/Recycle Goals: Salvage and recycle as much nonhazardous demolition and construction waste as possible. Owner has established a minimum goal of [_____] percent by weight of total waste generated by the Work for the following materials:
 - 1. Demolition Waste:
 - (a) Asphaltic concrete paving.

- (b) Concrete.
- (c) Concrete reinforcing steel.(d) Brick.
- (e) Concrete masonry units.
- (f) Wood studs.
- (g) Wood joists.
- (h) Plywood and oriented strand board.
- Wood paneling. (i)
- Wood trim. (j)
- (k) Structural and miscellaneous steel.
- (I) Rough hardware.
- (m) Roofing.
- (n) Insulation.
- (o) Doors and frames.
- (p) Door hardware.
- (q) Windows.
- (r) Glazing.
- (s) Metal studs.
- (t) Gypsum board.(u) Acoustical tile and panels.
- (v) Carpet.
- (w) Carpet pad.
- (x) Demountable partitions.
- (y) Equipment.
- (z) Cabinets.
 - (aa) Plumbing fixtures.
 - (bb) Piping.
 - (cc) Supports and hangers.
 - (dd) Valves.
 - (ee) Fire sprinklers.
 - (ff) Mechanical equipment.
 - (gg) Refrigerants.
 - (hh) Electrical conduit.
 - (ii) Copper wiring.
 - (jj) Lighting fixtures.
 - (kk) Lamps.
 - (II) Ballasts.
 - Electrical devices. (mm)
 - (nn) Switchgear and panelboards.
 - (oo) Transformers.
- 2. Construction Waste:
 - (a) Site-clearing waste, including boulders.
 - (b) Masonry and CMU.
 - (c) Lumber.
 - (d) Wood sheet materials.
 - (e) Wood trim.
 - (f) Metals.
 - (g) Roofing.
 - (h) Insulation.
 - Carpet and pad. (i)
 - Gypsum board. (j)
 - (k) Piping.

- (I) Electrical conduit.
- (m) Packaging: Regardless of salvage/recycle goal indicated above, salvage or recycle 100 percent of the following uncontaminated packaging materials:
 - (1) Paper.
 - (2) Cardboard.
 - (3) Boxes.
 - (4) Plastic sheet and film.
 - (5) Polystyrene packaging.
 - (6) Wood crates.
 - (7) Plastic pails.

1.4 SUBMITTALS

- A. Waste Management Plan: Submit 3 copies of plan within 10 working days of date established for the Notice of Award.
- B. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit three copies of reports. Include separate reports for demolition and construction waste. Include the following information:
 - 1. Material category.
 - 2. Generation point of waste.
 - 3. Total quantity of waste in tons.
 - 4. Quantity of waste salvaged, both estimated and actual in tons.
 - 5. Quantity of waste recycled, both estimated and actual in tons.
 - 6. Total quantity of waste recovered (salvaged plus recycled) in tons.
 - 7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.
- C. Forms: Prepare waste reduction progress reports on forms included at end of Part 3.
- D. Waste Reduction Calculations: Before request for Substantial Completion, submit 3 copies of calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
- E. Records of Donations: Indicate receipt and acceptance of salvageable waste donated to individuals and organizations. Indicate whether organization is tax exempt.
- F. Records of Sales: Indicate receipt and acceptance of salvageable waste sold to individuals and organizations. Indicate whether organization is tax exempt.
- G. Recycling and Processing Facility Records: Indicate receipt and acceptance of recyclable waste by recycling and processing facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

- H. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- I. LEED Submittal: LEED letter template for Credit MR 2.1 and MR 2.2, 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.
- J. Qualification Data: For refrigerant recovery technician.
- K. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.5 QUALITY ASSURANCE

- A. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- B. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Waste Management Conference: Conduct conference at Project site to comply with requirements in Division 1 Section 01310 Project Management and Coordination. Review methods and procedures related to waste management including, but not limited to, the following:
 - 1. Review and discuss waste management plan.
 - 2. Review requirements for documenting quantities of each type of waste and its disposition.
 - 3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
 - 4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
 - 5. Review waste management requirements for each trade.

1.6 WASTE MANAGEMENT PLAN

- A. General: Develop plan consisting of waste identification, waste reduction work plan, and cost/revenue analysis. Include separate sections in plan for demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing, and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator. Include points of waste generation, total quantity of

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each type of waste, quantity for each means of recovery, and handling and transportation procedures.

- 1. Salvaged Materials for Reuse: For materials that will be salvaged and reused in this Project, describe methods for preparing salvaged materials before incorporation into the Work.
- 2. Salvaged Materials for Sale: For materials that will be sold to individuals and organizations, include list of their names, addresses, and telephone numbers.
- 3. Salvaged Materials for Donation: For materials that will be donated to individuals and organizations, include list of their names, addresses, and telephone numbers.
- 4. Recycled Materials: Include list of local receivers and processors and type of recycled materials each will accept. Include names, addresses, and telephone numbers.
- 5. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
- 6. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.
- D. Cost/Revenue Analysis: Indicate total cost of waste disposal as if there was no waste management plan and net additional cost or net savings resulting from implementing waste management plan. Include the following:
 - 1. Total quantity of waste.
 - 2. Estimated cost of disposal (cost per unit). Include hauling and tipping fees and cost of collection containers for each type of waste.
 - 3. Total cost of disposal (with no waste management).
 - 4. Revenue from salvaged materials.
 - 5. Revenue from recycled materials.
 - 6. Savings in hauling and tipping fees by donating materials.
 - 7. Savings in hauling and tipping fees that are avoided.
 - 8. Handling and transportation costs. Include cost of collection containers for each type of waste.
 - 9. Net additional cost or net savings from waste management plan.
- E. Forms: Prepare waste management plan on forms included at end of Part 3.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 PLAN IMPLEMENTATION

- A. General: Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work occurring at Project site.
 - 1. Distribute waste management plan to everyone concerned within 3 days of submittal return.
 - 2. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.
- C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 - 1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged, recycled, reused, donated, and sold.
 - 2. Comply with Division 1 Section 01500 Temporary Facilities and Controls, for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items for Reuse in the Work:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until installation.
 - 4. Protect items from damage during transport and storage.
 - 5. Install salvaged items to comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make items functional for use indicated.
- B. Salvaged Items for Sale: Not permitted to be sold on Project site.
- C. Salvaged Items for Donation: Permitted on Project site.
- D. Salvaged Items for Owner's Use:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.

- 4. Transport items to Owner's storage area on-site designated by Owner.
- 5. Protect items from damage during transport and storage.
- E. Doors and Hardware: Brace open end of door frames. Except for removing door closers, leave door hardware attached to doors.

3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Recycling Receivers and Processors: Licensed entity normally engaged in the business of receiving, recycling, and processing waste materials with a minimum of 5 years of documented experience with the types of waste products to be processed under the provisions of this section.
- C. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall be shared equally by Owner and Contractor.
- D. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
 - 1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
 - 2. Inspect containers and bins for contamination and remove contaminated materials if found.
 - 3. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 4. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
 - 5. Store components off the ground and protect from the weather.
 - 6. Remove recyclable waste off Owner's property and transport to recycling receiver or processor.

3.4 RECYCLING DEMOLITION WASTE

- A. Bituminous Concrete Paving: Crush bituminous concrete paving and screen to comply with requirements in Division 2 Section 02300 Earthwork, for use as general fill and Section 02741 Bituminous Concrete Paving and Section 02751 Cement Concrete Pavement as granular base.
- B. Bituminous Concrete Paving: Break up and transport paving to asphalt-recycling facility.
- C. Concrete Reinforcement: Remove reinforcement and other metals from concrete and sort with other metals.
- D. Concrete: Break up and transport to concrete-recycling facility.

- E. Concrete: Crush concrete and screen to comply with requirements in Division 2 Section 02300 Earthwork for use as satisfactory soil for fill and Section 02741 Bituminous Concrete Paving and Section 02751 Cement Concrete Pavement as granular base .
- F. Wood Materials: Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, panel products, and treated wood materials.
- G. Metals: Separate metals by type.
 - 1. Structural Steel: Stack members according to size, type of member, and length.
 - 2. Remove and dispose of bolts, nuts, washers, and other rough hardware.
- H. Asphalt Shingle Roofing: Separate organic and glass-fiber asphalt shingles and felts. Remove and dispose of nails, staples, and accessories.
- I. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location. Remove edge trim and sort with other metals. Remove and dispose of fasteners.
- J. Acoustical Ceiling Panels and Tile: Stack large clean pieces on wood pallets and store in a dry location.
- K. Acoustical Ceiling Suspension Systems: Separate suspension system, trim, and other metals from panels and tile and sort with other metals.
- L. Carpet and Pad: Roll large pieces tightly after removing debris, trash, adhesive, and tack strips.
- M. Equipment: Drain tanks, piping, and fixtures. Seal openings with caps or plugs. Protect equipment from exposure to weather.
- N. Plumbing Fixtures: Separate by type and size.
- O. Piping: Reduce piping to straight lengths and store by type and size. Separate supports, hangers, valves, sprinklers, and other components by type and size.
- P. Lighting Fixtures: Separate lamps by type and protect from breakage.
- Q. Electrical Devices: Separate switches, receptacles, switchgear, transformers, meters, panelboards, circuit breakers, and other devices by type.
- R. Conduit: Reduce conduit to straight lengths and store by type and size.

3.5 RECYCLING CONSTRUCTION WASTE

- A. Packaging:
 - 1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
 - 2. Polystyrene Packaging: Separate and bag materials.

- 3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
- 4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.
- B. Site-Clearing Wastes: Chip brush, branches, and trees on-site.
 - 1. Comply with requirements in Division 2 Section 02900 Planting for use of chipped organic waste as organic mulch.
- C. Wood Materials:
 - 1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
 - 2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.
 - (a) Comply with requirements in Division 2 Section 02900 Planting for use of clean sawdust as organic mulch.
- D. Gypsum Board: Stack large clean pieces on wood pallets and store in a dry location.
 - 1. Clean Gypsum Board: Grind scraps of clean gypsum board using small mobile chipper or hammer mill. Screen out paper after grinding.
 - (a) Comply with requirements in Division 2 Section 02900 Planting for use of clean ground gypsum board as inorganic soil amendment.

3.6 DISPOSAL OF WASTE

- A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
- B. Do not allow waste materials that are to be disposed of accumulate on-site. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- C. Burning: Do not burn waste materials.
- D. Disposal: Transport waste materials off Owner's property and legally dispose of them.

3.6 FORMS

- A. Waste Management Plan Forms Attached:
 - 1. Construction Waste Reduction Progress Report.
 - 2. Demolition Waste Reduction Progress Report.
 - 3. Construction Waste Identification.
 - 4. Demolition Waste Identification.

- 5. Construction Waste Reduction Work Plan.
- 6. Demolition Waste Reduction Work Plan.
- 7. Cost/Revenue Analysis of Construction Waste Reduction Work Plan.
- 8. Cost/Revenue Analysis of Demolition Waste Reduction Work Plan.

END OF SECTION

CONSTRUCTION WAST	E REDUCTION	N PROGRESS R	EPORT					
		TOTAL QUANTITY OF WASTE TONS (A)	QUANTITY OI SALVAGED	F WASTE	QUANTITY OF WASTE RECYCLED			FOTAL QUANTITY
MATERIAL CATEGORY	GENERATIO N POINT		ESTIMATED TONS	ACTUAL TONS (B)	ESTIMATED TONS	ACTUAL TONS (C)	OF WASTE RECOVERED TONS (D = B + C)	OF WASTE RECOVERE D % (D/Ax100)
Packaging: Cardboard								
Packaging: Boxes								
Packaging: Plastic Sheet or Film								
Packaging: Polystyrene								
Packaging: Pallets or Skids								
Packaging: Crates								
Packaging: Paint Cans								
Packaging: Plastic Pails								
Site-Clearing Waste								
Masonry or CMU								
Lumber: Cut-Offs								
Lumber: Warped Pieces								
Plywood or OSB (scraps)								
Wood Forms								
Wood Waste Chutes								
Wood Trim (cut-offs)								
Metals								
Insulation								
Roofing								
Joint Sealant Tubes								
Gypsum Board (scraps)								
Carpet and Pad (scraps)								
Piping								
Electrical Conduit								
Other:								

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DEMOLITION WASTE REDUCTION PROGRESS REPORT								
	GENERATIO N POINT	TOTAL QUANTITY OF WASTE TONS (A)	QUANTITY OF WASTE SALVAGED		QUANTITY OF WASTE RECYCLED		TOTAL QUANTITY	TOTAL QUANTITY
MATERIAL CATEGORY			ESTIMATE D TONS	ACTUAL TONS (B)	ESTIMATE D TONS	ACTUAL TONS (C)	OF WASTE RECOVERED TONS (D=B+C)	OF WASTE RECOVERED % (D/Ax100)
Asphaltic Concrete Paving								
Concrete								
Brick								
СМU								
Lumber								
Plywood and OSB								
Wood Paneling								
Wood Trim								
Miscellaneous Metals								
Structural Steel								
Rough Hardware								
Insulation								
Roofing								
Doors and Frames								
Door Hardware								
Windows								
Glazing								
Acoustical Tile								
Carpet								
Carpet Pad								
Demountable Partitions								
Equipment								
Cabinets								
Plumbing Fixtures								

(12)

Piping				
Supports and Hangers				
Valves				
Sprinklers				
Mechanical Equipment				
Electrical Conduit				
Copper Wiring				
Light Fixtures				
Lamps				
Lighting Ballasts				
Electrical Devices				
Switchgear and Panel boards				
Transformers				
Other:				

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CONSTRUCTION WASTE MANAGEMENT 01524 (13)

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CONSTRUCTION WASTE II	DENTIFICATION	N					
MATERIAL CATEGORY	GENERATION POINT	EST. QUANTITY OF MATERIALS RECEIVED (A)	EST. WASTE - % (B)	TOTAL EST. QUANTITY OF WASTE* (C=AxB)	EST. VOLUME	EST. WEIGHT TONS	REMARKS AND ASSUMPTION S
Packaging: Cardboard							
Packaging: Boxes							
Packaging: Plastic Sheet or Film							
Packaging: Polystyrene							
Packaging: Pallets or Skids							
Packaging: Crates							
Packaging: Paint Cans							
Packaging: Plastic Pails							
Site-Clearing Waste							
Masonry or CMU							
Lumber: Cut-Offs							
Lumber: Warped Pieces							
Plywood or OSB (scraps)							
Wood Forms							
Wood Waste Chutes							
Wood Trim (cut-offs)							
Metals							
Insulation							
Roofing							
Joint Sealant Tubes							
Gypsum Board (scraps)							
Carpet and Pad (scraps)							
Piping							
Electrical Conduit							
Other:							

* Insert units of measure.

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DEMOLITION WASTE IDENTIFICATION								
		EST. VOLUME	EST. WEIGHT	REMARKS AND				
MATERIAL DESCRIPTION	EST. QUANTITY	CY	TONS	ASSUMPTIONS				
Asphaltic Concrete Paving								
Concrete								
Brick								
СМИ								
Lumber								
Plywood and OSB								
Wood Paneling								
Wood Trim								
Miscellaneous Metals								
Structural Steel								
Rough Hardware								
Insulation								
Roofing								
Doors and Frames								
Door Hardware								
Windows								
Glazing								
Acoustical Tile								
Carpet								
Carpet Pad								
Demountable Partitions								
Equipment								
Cabinets								
Plumbing Fixtures								
Piping								
Piping Supports and Hangers								
Valves								
Sprinklers								
Mechanical Equipment								
Electrical Conduit								
Copper Wiring								
Light Fixtures								
Lamps								
Lighting Ballasts								

Electrical Devices		
Switchgear and Panelboards		
Transformers		
Other:		

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CONSTRUCTION WASTE MANAGEMENT 01524 (17)

REV. 01/04

CONSTRUCTION WASTE REDUCTION WORK PLAN								
TOTAL EST DISPOSAL METHOD AND QUANTITY								
MATERIAL CATEGORY	GENERATIO N POINT	QUANTITY OF WASTE TONS	EST. AMOUNT SALVAGED TONS	EST. AMOUNT RECYCLED TONS	EST. AMOUNT DISPOSED TO LANDFILL TONS	HANDLING AND TRANSPORTATION PROCEDURES		
Packaging: Cardboard								
Packaging: Boxes								
Packaging: Plastic Sheet or								
Film								
Packaging: Polystyrene								
Packaging: Pallets or Skids								
Packaging: Crates								
Packaging: Paint Cans								
Packaging: Plastic Pails								
Site-Clearing Waste								
Masonry or CMU								
Lumber: Cut-Offs								
Lumber: Warped Pieces								
Plywood or OSB (scraps)								
Wood Forms								
Wood Waste Chutes								
Wood Trim (cut-offs)								
Metals								
Insulation								
Roofing								
Joint Sealant Tubes								
Gypsum Board (scraps)								
Carpet and Pad (scraps)								
Piping								
Electrical Conduit								
Other:								
DEMOLITION WASTE REDUCTION WORK PLAN								
--------------------------------------	-------------------------	------------------------------	---------------------------------	---------------------------------	--	--	--	--
		TOTAL FOT	DISPOSAL ME	THOD AND QUAN	NTITY			
MATERIAL CATEGORY	GENERATIO N POINT	QUANTITY OF WASTE TONS	EST. AMOUNT SALVAGED TONS	EST. AMOUNT RECYCLED TONS	EST. AMOUNT DISPOSED TO LANDFILL TONS	HANDLING & TRANSPORTION PROCEDURES		
Asphaltic Concrete Paving								
Concrete								
Brick								
СМИ								
Lumber								
Plywood and OSB								
Wood Paneling								
Wood Trim								
Miscellaneous Metals								
Structural Steel								
Rough Hardware								
Insulation								
Roofing								
Doors and Frames								
Door Hardware								
Windows								
GlazIng								
Acoustical Tile								
Carpet								
Carpet Pad								
Demountable Partitions								
Equipment								
Cabinets								
Plumbing Fixtures								
Piping								
Supports and Hangers								
Valves								
Sprinklers								
Mechanical Equipment								
Electrical Conduit								
Copper Wiring								

Light Fixtures			
Lamps			
Lighting Ballasts			
Electrical Devices			
Switchgear and			
Panelboards			
Transformers			
Other:			

CONSTRUCTION WASTE MANAGEMENT 01524 (21)

COST/REVENUE	ANALYSIS OF CO	NSTRUCTION	WASTE RE	DUCTION WOR	K PLAN			
MATERIALS	TOTAL QUANTITY OF MATERIALS (VOL. OR WEIGHT) (A)	EST. COST OF DISPOSAL (B)	TOTAL EST. COST OF DISPOSAL (C = A x B)	REVENUE FROM SALVAGED MATERIALS (D)	REVENUE FROM RECYCLED MATERIALS (E)	LANDFILL TIPPING FEES AVOIDED (F)	HANDLING AND TRANSPORTAT ION COSTS AVOIDED (G)	NET COST SAVINGS OF WORK PLAN (H = D+E+F+G)
Packaging:								
Cardboard								
Packaging: Boxes								
Packaging: Plastic Sheet or Film								
Packaging:								
Polystyrene								
Packaging: Pallets or Skids								
Packaging: Crates								
Packaging: Paint Cans								
Packaging: Plastic Pails								
Site-Clearing Waste								
Masonry or CMU		1						
Lumber: Cut-Ofts								
Lumber: Warped Pieces or OSB								
Wood Forms								
Wood Waste Chutes								
Wood Trim (cut- ofts)								
Metals								
Insulation								
Roofing								
Joint Sealant Tubes								

Gypsum Board				
(scraps)				
Carpet and Pad				
(scraps)				
Piping				
Electrical Conduit				
Other:				

CONSTRUCTION WASTE MANAGEMENT 01524 (23)

COST/REVENUE ANALYSIS OF DEMOLITION WASTE REDUCTION WORK PLAN									
MATERIALS	TOTAL QUANTITY OF MATERIALS (VOL. OR WEIGHT) (A)	EST. COST OF DISPOSAL (B)	TOTAL EST. COST OF DISPOSAL (C= A x B)	REVENUE FROM SALVAGE D MATERIAL S (D)	REVENUE FROM RECYCLED MATERIALS (E)	LANDFILL TIPPING FEES AVOIDED (F)	HANDLING AND TRANSPORTATIO N COSTS AVOIDED (G)	NET COST SAVINGS OF WORK PLAN (H = D+E+F+G)	
Asphaltic Concrete				(-)					
Paving									
Concrete									
Brick									
СМU									
Lumber									
Plywood and OSB									
Wood Paneling									
Wood Trim									
Miscellaneous Metals									
Structural Steel									
Rough Hardware									
Insulation									
Roofing									
Doors and Frames									
Door Hardware									
Windows									
Glazing									
Acoustical Tile									
Carpet									
Carpet Pad									
Demountable Partitions									
Equipment									
Cabinets									
Plumbing Fixtures									
Piping									
Supports and Hangers									
Valves									
Sprinklers									

Mech. Equipment				
Electrical Conduit				
Conner Wiring				
Light Fixtures				
Lamps				
Lighting Ballasts				
Electrical Devices				
Switchgear and				
Panelboards				
Transformers				
Other:				

CONSTRUCTION WASTE MANAGEMENT 01524 (25)

CONSTRUCTION STAGING AREAS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Contractor Staging Area requirements.

1.3 RELATED SECTIONS

- A. Section 01100 Summary of the Work: Contractor's use of site and premises.
- B. Section 01520 Construction Facilities: Field offices and sheds.
- C. Section 01540 Security
- D. Section 01550 Vehicular Access and Parking: Construction parking.
- E. Section 01560 Temporary Barriers and Enclosures: Temporary construction barriers, enclosures and passageways.
- F. Section 01570 Temporary Controls: Storm water pollution prevention measures; video record of existing conditions to be used to determine restoration Work.
- G. Section 01580 Project Identification and Signage: Directional and informational signage.
- H. Section 01740 Cleaning Requirements: Periodic cleaning and cleaning for Substantial Completion review.

1.4 SUBMITTALS

- A. Shop Drawings: Prior to site mobilization, Contractor shall prepare and submit for review by University's Representative a site plan indicating detailed layout of Contractor Staging Area, including:
 - 1. Temporary utilities
 - 2. Temporary fencing and gates
 - 3. Temporary offices and sheds
 - 4. Construction aids
 - 5. Vehicular accessways and on-site parking
 - 6. Temporary barriers and enclosures

- 7. Storm water pollution prevention measures
- B. Provide a traffic control plan prior to commencement of construction. This plan shall outline flagging procedures and delivery/movement timing so as to avoid peak traffic periods. The plan shall also outline procedures for notifying the Campus Police of forthcoming lane or roadway closures. Allow campus Police to modify emergency response plans and notify other public service providers (such as City of San Marcos Fire Department) of closures as required.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

3.1 CONTRACTOR STAGING AREA REQUIREMENTS

- A. Contractor Staging Areas: Refer to reference drawings included in the set of Contract Drawings for location of Contractor Staging Areas.
 - 1. Contractor shall use only site areas designated specifically by University as Contractor Staging Area for the Project.
 - 2. Contractor Staging Area for the Project shall be clearly delineated by means of signage. Contractor shall remove equipment placed or located outside of areas designated for Contractor Staging Area to within Contractor Staging Area at no change in Contract Time and Contract Sum.
 - 3. Contractor shall keep access to Contractor Staging Areas and other construction access ways and thoroughfares clear at all times. Contractor shall provide traffic and parking control signage acceptable to University's Representative.
- B. Cleanliness: Contractor shall keep Contractor Staging Area clear of trash and debris and in neat order. Contractor shall be responsible for cleanliness and order of assigned Contractor Staging Areas, as acceptable to University's Representative.

3.2 REMOVAL OF CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

- A. Removal of Construction Facilities and Temporary Controls: Unless otherwise mutually agreed by University's Representative and Contractor, Contractor shall remove temporary materials, equipment, services, and construction prior to Contract Completion review. Contractor shall coordinate removal with requirements specified in Section 01510 - Temporary Utilities, Section 01520 - Construction Facilities, Section 01550 - Vehicular Access and Parking and Section 01560 - Temporary Barriers and Enclosures.
- B. Cleaning and Repairs: Contractor shall clean and repair damage caused by installation or use of temporary facilities on public and private rights-of-way.
- C. Removal of Temporary Utilities and Restoration: Contractor shall remove temporary underground utility installations to a depth of two feet. Backfill, compact and regrade site as necessary to restore areas or to prepare for indicated paving and landscaping.

CONSTRUCTION AIDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

EDIT LIST OF CONSTRUCTION AIDS BELOW TO SUIT PROJECT REQUIREMENTS.

- A. Construction aids, including:
 - 1. Temporary lifts and hoists
 - 2. Debris chutes
 - 3. Temporary stairs
 - 4. Scaffolding

1.3 RELATED SECTIONS

- A. Section 01100 Summary of the Work: Contractor's use of site and premises
- B. Section 01560 Temporary Barriers and Enclosures: Temporary construction barriers, enclosures and passageways

EDIT THE FOLLOWING TO SUIT PROJECT REQUIREMENTS.

C. [Section 14210 - Electric Traction Elevators:] [Section 14240 - Hydraulic Elevators:] Use of building elevators for construction activities.

1.4 CODES AND REGULATIONS

A. Safety Regulations: Contractor shall comply with requirements of all applicable Federal, State and local safety rules and regulations. Contractor shall be solely responsible for jobsite safety.

1.5 TEMPORARY LIFTS AND HOISTS

A. Temporary Lifts and Hoists: Contractor shall provide facilities for hoisting materials and personnel. Mobile lifts and truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

- B. Temporary Elevator Usage: [Refer to [Section 14210 Electric Traction Elevators] [Section 14240 Hydraulic Elevators] for use of building elevator[s] during construction.
 - 1. Contractor shall provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame.
 - 2. Contractor shall clean and restore elevator cars used during construction.
 - 3. If, despite such protection, elevators become damaged, Contractor shall engage (and Contract Sum shall include) elevator Installer to restore damaged work so no evidence remains of correction Work.
 - 4. Contractor shall return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.

1.6 DEBRIS CHUTES

- A. Debris Chutes: Contractor shall provide chutes as necessary for debris removal. Contractor shall:
 - 1. Construct debris chutes of substantial materials. Use cylindrical, laminated fiber forms (Sonotube or equal) to minimize noise of debris removal.
 - 2. Provide controls at debris chutes to minimize spread of dust and debris.
 - 3. Limit use of debris chutes to times to minimize disruption of activities in adjacent spaces.

1.7 TEMPORARY STAIRS AND SCAFFOLDING

- A. Temporary Stairs: Until permanent stairs are available, Contractor shall provide temporary stairs where ladders are not adequate. Contractor shall cover finished, permanent stairs with protective covering of plywood or similar material so finishes will be undamaged at time of Contract Completion review.
- B. Permanent Stair Usage: Use of permanent stairs will be permitted, as long as Contractor cleans and maintains stairs in a condition acceptable to University's Representative.
 - 1. Contractor shall provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress.
 - 2. If, despite such protection, stairs become damaged, Contractor shall restore damaged areas as acceptable to University's Representative.
 - 3. Contractor shall coordinate usage of existing stairs at occupied facilities with University's Representative.
- C. Scaffolding: Contractor shall provide scaffolding as necessary for access and proper performance of the Work. Design and installation of scaffolding shall be solely Contractor's responsibility.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

3.1 MAINTENANCE OF CONSTRUCTION AIDS

- A. Maintenance: Contractor shall use all means necessary to maintain construction aids in proper and safe condition throughout progress of the Work.
- B. Replacement: In the event of loss or damage, Contractor shall promptly restore construction aids by repair or replacement at no change in the Contract Sum or Contract Time.

3.2 REMOVAL OF CONSTRUCTION AIDS

- A. Removal of Construction Aids: Unless otherwise mutually agreed by University's Representative and Contractor, Contractor shall remove construction aids prior to Contract Completion review. Contractor shall coordinate removal with requirements specified in Section 01510 - Temporary Utilities, Section 01520 - Construction Facilities, Section 01550 - Vehicular Access and Parking and Section 01560 -Temporary Barriers and Enclosures.
- B. Cleaning and Repairs: Contractor shall clean and repair damage caused by installation or use of construction aids.

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Projec Projec Date	t Name I t No. SN	nere I – <mark>XXXX</mark>		NOT FOR USE WITHOUT EDITING	
			SECTION 01541		
			SECURITY		
PAR	T 1 - G	ENERAL			
1.1	REL	ATED DOCUMENTS			
A.	Cons inclue Spec	truction Drawings, Technica ding Contract General Conc ification Sections, apply to t	al Specifications, Addenda, and genera litions and Supplementary General Co his Section.	al provisions of the Contract, nditions and other Division 1	
1.2	SEC	FION INCLUDES			
Α.	Cont	ractor Security requirements	5.		
1.3	REL	ATED SECTIONS			
Α.	Secti	on 01100 - Summary of the	Work: Contractor's use of site and pro-	emises	
В.	Secti and p	on 01560 - Temporary Barri bassageways	iers and Enclosures: Temporary cons	ruction barriers, enclosures	
1.4	SEC	JRITY			
A.	In ad Cont	dition to security requirement ractor shall adhere to the following the	nts contained in the <u>Contract General (</u> llowing requirements for security:	Conditions (Article 4.08-c),	Formatted: Not Highlight
	1.	Contractor shall protect th have sole responsibility fo	e Work from theft, vandalism an unau r job site security.	thorized entry. Contractor shall	
	2.	Contractor shall maintain acceptance.	security throughout construction until t	ne University's occupancy or	
	3.	Keying. Contractor shall p and include organized, loc finish hardware throughou	rovide construction keying different fro ked and supervised storage for receiv it the construction.	m permanent keying of locks ing and dispensing items of	
	4.	Provide Inspector Access gain access to locked are keys and will return them	. Contractor shall provide the Project Ir as of the Work. The Project Inspector to the Contractor upon acceptance of t	nspector with keys necessary to will be responsible for such he project or area as complete.	
1.5	ENTI	RY CONTROL			
A.	Cont prope	ractor shall restrict entrance er identification and as requi	te to authorized persons with e Work.	Formatted: Not Highlight	
В.	Cont	ractor shall allow building er	proper identification.		
1.6	PER	MANENT KEYS			
Α.	For v	ork within existing buildings	s, Contractor will be issued permanent	keys on a day by day basis.	
			SECURITY 01541-1		

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Contractor may request permanent keys on line through the University key request website. Contractor is to check out keys at The Facility Services department upon written approval. Contractor will be required to designate specific individuals responsible for keys. Keys will be provided to those individuals upon receipt of a valid California driver's license. Keys are to be returned at the end of each day, in which the CDL will be returned to the individual.

- B. If permanent keys are required for longer than a daily basis, Contractor must request keys in writing for approval by the University.
- C. Immediately upon receipt of permanent keys for whatever purpose (finish hardware, mechanical equipment, casework, dispensers, lockers, switches, equipment items, etc.), Contractor shall tag or otherwise clearly identify keys according to one approved system and turn them over to the University's Representative prior to any opportunity of access to keys by parties other than the University.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

Not applicable to this Section.

VEHICULAR ACCESS AND PARKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Requirements for vehicular access to Work areas
- B. Requirements for construction parking

1.3 RELATED SECTIONS

- A. Section 01100 Summary of the Work: Contractor's use of site and premises.
- B. Section 01520 Construction Facilities: Coordination of access to field offices and sheds.
- C. Section 01525 Construction Staging Areas: Layout of construction staging area, including locations for vehicular access and construction parking.
- D. Section 01560 Temporary Barriers and Enclosures: Requirements for temporary construction barriers, enclosures and passageways, applicable to construction parking areas.
- E. Section 01580 Project Identification and Signage: Directional and informational signage.
- F. Section 01570 Temporary Controls: Storm water pollution prevention measures; video record of existing conditions to be used to determine restoration Work.
- G. Section 0174001740 Cleaning Requirements: Cleaning during construction and final cleaning.

1.4 **PROTECTION OF EXISTING CONDITIONS**

A. Protection of Adjacent Facilities: Contractor shall restrict Work to limits indicated on the Drawings and as specified in Section 01100 - Summary of the Work. Contractor shall protect existing, adjacent facilities from damage, including soiling and debris accumulation.

1.5 SITE ACCESS

- A. Site Access: Use of designated existing on-site streets and driveways for construction traffic is permitted. Contractor shall review access routes with University Representative and comply with University Representative's directions.
 - 1. Contractor shall ensure that tracked vehicles shall not use paved areas.
 - 2. Contractor shall provide unimpeded access for emergency vehicles. Contractor shall maintain 20-foot (6 m) width driveways with turning space between and around combustible materials.
 - 3. Contractor shall provide and maintain access to fire hydrants free of obstructions.
 - 4. Contractor shall clean and restore paving and other site features after construction use.
- B. Traffic Control:

- 1. Contractor shall comply with all on-campus traffic regulations, including speed limits. Contractor shall pay all parking and traffic fines.
- 2. Blockage of site roadways and access to site parking lots and parking structures shall be only with approval of University's Representative. Contractor shall comply with University's restrictions on blocking roadways and parking areas.
- 3. Contractor shall employ trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on vehicular and pedestrian traffic lanes.
- 4. Contractor shall provide signage, cones and other suitable devices to direct traffic. Contractor shall use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
- 5. Large vehicles shall have University public safety escort. Contractor shall provide minimum 48 hours written notice through University Representative.
- 6. Contractor shall comply with the requirements of any University "Contractor Safety Handbook."

1.6 TRAFFIC SIGNS AND SIGNALS

A. Traffic Signs and Signals: Contractor shall provide temporary signs and signals as required by authorities having jurisdiction and in compliance with University's requirements transmitted through University Representative. Contractor shall relocate signs and signals as necessary during construction. Refer to University Environmental Health & Safety requirements.

1.7 CONSTRUCTION PARKING

A. Construction Parking:

- 1. Contractor shall not park on public roadways unless approved by campus police and fire authorities.
- 2. Contractor shall maintain clear access ways and parking for emergency vehicles, as required by campus police and fire authorities.
- 3. Contractor shall provide on-site parking for construction purposes. Contractor's administrative personnel may park within the boundaries of Work and areas provided as indicated with a University parking permit. Permits shall be obtained through the Parking Administration Office.
- 4. Contractor parking shall not be permitted in any Campus parking lot or on streets, without a parking permit purchased from the University. Parking fees in University student lots cost \$XXX per day; \$XXX per month and are posted on the University website and are subject to change.
- 5. Provide additional off-site parking at Contractor's expense.
- 6. Contractor shall provide and maintain 6 parking spaces for University's Representatives and 2 parking spaces for Architect within the construction site and adjacent to the representative's offices at all times. Furnish and maintain any necessary gravel driveways as directed to provide access to parking or the site. Maintain spaces free of all obstructions, hazards, and properly signed to assure use by the proper parties. If Contractor is unable to maintain access with gravel, provide temporary asphalt paving.

PART 3 - EXECUTION

3.1 MAINTENANCE OF PARKING AND ACCESS ROADS

- A. Maintenance: Contractor shall maintain traffic and parking areas in a sound condition. Contractor shall repair breaks, potholes, low areas, standing water and other deficiencies, to maintain paving and drainage in original or specified condition.
- B. Cleaning of Roadways and Parking Areas: Contractor shall keep public and private rights-of-way and parking areas clear of construction-caused soiling, dust and debris, especially debris hazardous to vehicle tires. Contractor shall perform cleaning as frequently as necessary. Contractor shall coordinate with requirements specified in Section 01570 Temporary Controls and Section 01740 Cleaning Requirements.

TEMPORARY BARRIERS AND ENCLOSURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Temporary construction barriers, enclosures and passageways.
 - 1. Dust and debris barriers.
 - 2. Security barriers.
 - 3. Temporary chain link fencing.
 - 4. Covered passageways.
- B. Protection of completed Work.
- C. Removal of construction facilities and temporary controls.

1.3 RELATED SECTIONS

- A. Section 01100 Summary of the Work: Contractor's use of site and premises
- B. Section 01510 Temporary Utilities: Temporary sanitary facilities, power and lighting
- C. Section 01520 Construction Facilities: Installation of Construction Facilities
- D. Section 01525 Construction Staging Areas: Submittals, staging and removal
- E. Section 01540 Construction Aids: Temporary lifts, hoists, stairs, scaffolding
- F. Section 01541 Security
- G. Section 01550 Vehicular Access and Parking: Construction parking restrictions
- H. Section 01568 Tree and Plant Protection: Requirements for barriers and covers at existing trees, shrubs and ground covers
- I. Section 01570 Temporary Controls: General requirements for protection of existing conditions and run-off control
- J. Section 01580 Project Identification and Signage: Directional and informational signage.

1.4 CODES AND REGULATIONS

A. California Building Code (CBC): Comply with California Building Code (CBC) Chapter 33, Section 3303, Protection of Pedestrians During Construction or Demolition.

- B. Fire Regulations: Comply with requirements of fire authorities having jurisdiction, including California Fire Code (CFC) Article 87 during performance of the Work.
- C. Safety Regulations: Comply with requirements of all applicable Federal, State and local safety rules and regulations. Contractor shall be solely responsible for jobsite safety.
- D. Barricades and Barriers: As required by governing authorities having jurisdiction, provide substantial barriers, guardrails and enclosures around Work areas and adjacent to embankments and excavations for protection of workers and the public.

1.5 PROTECTION OF EXISTING CONDITIONS

- A. Protection of Adjacent Facilities: Contractor shall restrict Work to limits indicated on the Drawings and as specified in Section 01100 - Summary of the Work: Protect existing, adjacent facilities from damage, including soiling and debris accumulation.
- B. Protection of Existing Furniture, Fixtures and Equipment: As applicable, provide temporary enclosures, barriers and covers to protect existing furniture, fixtures and equipment remaining in Project area during construction.

1.6 MAINTENANCE OF CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

- A. Maintenance: Use all means necessary to maintain temporary barriers and enclosures in proper and safe condition throughout progress of the Work.
- B. Replacement: In the event of loss or damage, promptly restore temporary barriers and enclosures by repair or replacement at no change in the Contract Sum or Contract Time.

1.7 TEMPORARY BARRIERS, ENCLOSURES AND PASSAGEWAYS

- A. Temporary Barriers, General: Provide temporary fencing, barriers and guardrails as necessary to provide for public safety, to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.
 - 1. Refer to temporary fencing and phasing plan in the Drawings. Comply with requirements indicated.
 - 2. Note requirements for continued occupancy and use of existing buildings and site areas during construction.
 - 3. Comply with applicable requirements of California Building Code (CBC) and authorities having jurisdiction, including industrial safety regulations. Review requirements with University's Representative.
 - 4. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for firefighting.
 - 5. Paint temporary barriers and enclosures with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard.
 - 6. Where appropriate and necessary, provide warning lighting, including flashing red or amber

lights.

- B. Temporary Chain-Link Fencing: Provide temporary portable chain-link fencing with windscreen. See Section 01525 Staging Area for requirements for layout of fencing.
 - 1. Portable Chain-Link Fencing: Minimum 2-inches (50-mm) 11-gauge, galvanized steel, chain-link fabric fencing; minimum 8-feet (2.4 m) high with galvanized steel pipe posts; minimum 2-3/8-inches- (60-mm-) OD line posts and 2-7/8-inches- (73-mm-) OD corner and pull posts, with 1-5/8-inches- (42-mm-) OD top and bottom rails.
 - a. Provide concrete or galvanized steel bases for supporting posts.
 - b. Provide protective barriers at bases to prevent tripping by pedestrians.
 - 2. Windscreen on Chain-Link Fencing: For screening of construction activities from view, equivalent to the following:
 - a. Acceptable manufacturers: None identified. Equivalent products of other manufacturers will be considered in accordance with the "or equal" provision specified in Section 01610 Basic Product Requirements.
 - b. Windscreen fabric: Closed mesh weave of 30 warp by 16 fills per square inch.
 - 1) Fiber: 5.6 ounce per square yard polypropylene fiber.
 - 2) Shade factor: 78 percent.
 - 3) Tensile strength: 360 pounds for warp and 190 pounds for fill, when tested according to ASTM D1682, grab method.
 - 4) Tear strength: 110 pounds for warp and 70 pounds for fill, when tested according to ASTM D2263, trapezoidal method.
 - c. Fabric fabrication:
 - 1) Reinforce hems and seams with 2-3/4 inch black polypropylene folded binding tape, with tensile strength of 300 pounds.
 - 2) Provide center reinforcing tape in addition to reinforced perimeter hems and panel seams.
 - 3) Sew hems and seams with UV light resistant polyester thread.
 - 4) Provide 9/32-inch brass grommets spaced at 12-inches on center in perimeter hems and center reinforcing tape.
 - d. Secure windscreen to fence at all grommets.
 - e. Locate windscreen on outside of fence.
- C. Tarpaulins: Fire-resistive labeled with flame-spread rating of 15 or less.
- D. Covered Passageways: Erect structurally adequate, protective, covered walkways for passage of persons along adjacent passageways.
 - 1. Coordinate installation details with University's requirements for continuing operations in adjoining facilities.
 - 2. Review design and details with University's Representative.
 - 3. Comply with applicable regulations of authorities having jurisdiction.
 - 4. Construct covered walkways using scaffold or shoring framing.
 - 5. Provide wood-plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and

safe passage.

- 6. Extend back wall beyond the structure to complete enclosure fence.
- 7. Paint and maintain in a manner as directed by University's Representative.
- E. Temporary Wood Fencing: Erect a structurally adequate, protective wood fencing in compliance with California Building Code (CBC) Chapter 33, Section 3303.7 Pedestrian Protection. Wood fencing shall be provided as required by Table 33-A.
 - 1. Materials: As required by CBC Section 3303.7.
 - 2. Finishes: As acceptable to University's Representative. Fence where exposed to public view shall receive minimum of one coat wood primer and one coat semi-gloss paint, color(s) as directed by University's Representative.
- F. Temporary Closures: Provide temporary closures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather-tight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate closures with ventilating and material drying or curing requirements to avoid dangerous conditions and effects such as mold.
 - 2. Vertical openings: Close openings of 25 sq. ft. (2.3 sq. m) or less with plywood or similar materials.
 - 3. Horizontal openings: Close openings in floor or roof decks and horizontal surfaces with loadbearing, wood-framed construction.
 - 4. Install tarpaulins securely using wood framing and other suitable materials.
 - 5. Where temporary wood or plywood enclosure exceeds 100 sq. ft. (9.2 sq. m) in area, use fireretardant-treated material for framing and main sheathing.
- G. Temporary Partitions: Erect and maintain temporary partitions and temporary closures to limit dust and dirt migration, including migration into existing facilities, to separate areas from fumes and noise and to maintain fire-rated separations.

INCLUDE FOLLOWING TWO SUBPARAGRAPHS FOR ALTERATION PROJECTS, AND IF CONDITIONS AT NEW CONSTRUCTION INCLUDE INTERFACE WITH EXISTING FACILITY.

- 1. Dust barriers: Construct dustproof, floor-to-ceiling partitions of not less than nominal 4-inch (100mm) studs, 2 layers of 3-mil (0.07-mm) polyethylene sheets, inside and outside temporary enclosure.
 - a. Overlap and tape full length of joints.
 - b. Include 5/8-inch thick gypsum board at temporary partitions serving as noise barrier.
 - c. Insulate partitions to minimize noise transmission to adjacent occupied areas.
 - d. Seal joints and perimeter of temporary partitions.

- 2. Dust barrier passages: Where passage through dust barrier is necessary, provide gasketed doors or heavy plastic sheets that effectively prevent air passage.
 - a. Construct a vestibule and airlock at each entrance to temporary enclosure with not less than 48 inches (1219 mm) between doors.
 - b. Maintain water-dampened foot mats in vestibule where passage leads to existing occupied spaces.
 - c. Equip doors with security locks.
- 3. Fire-rated temporary partitions: Maintain fire-rated separations, including corridor walls and occupancy separations, by construction of stud partitions with gypsum board faces.
 - a. Construction details shall comply with recognized time-rated fire-resistive construction. Typically, 1-hour rated partitions shall be 2x4 wood studs at 16-inches on center or 3-1/2 inch metal studs at 16-inches on center, with 5/8-inch thick Type X gypsum board at both faces, with joints filled, taped and topped.
 - b. Seal partition perimeters with acceptable fire stopping and smoke seal materials.
 - c. Construct fire-rated temporary partitions whenever existing time-rate fire-resistive construction is removed for 12 hours or more.
- H. HVAC Protection: Provide dust barriers at HVAC return grilles and air inlets to prevent spread of dust and clogging of filters.
- I. Temporary Floor Protection: Protect existing floors from soiling and damage.
 - 1. Cover floor with 2 layers of 3-mil (0.07-mm) polyethylene sheets, extending sheets 18 inches (460 mm) up the side walls.
 - 2. Cover polyethylene sheets with 3/4-inch (19-mm) fire-retardant plywood.
 - 3. Provide floor mats to clean dust from shoes.
- J. Landscape Barriers: Provide barriers around trees and plants designated to remain. Coordinate with requirements specified in Section 01568 Tree and Plant Protection.
 - 1. Locate barriers as directed outside of drip lines of trees and plants.
 - 2. Protect entire area under trees against vehicular traffic, stored materials, dumping, chemically injurious materials, and puddling or continuous running water.
 - 3. Contractor shall pay all costs to restore trees and plants within barriers that are damaged by construction activities. Restoration shall include replacement with plant materials of equal quality and size. Costs shall include all fines, if any, levied by authorities having jurisdiction.
- K. Barricades, Warning Signs and Lights, General: Comply with standards and code requirements for erection of structurally adequate barricades. Paint barricades with appropriate colors, graphics and warning signs to inform personnel and the public when protecting them against a hazard. Where appropriate and needed provide lighting, including flashing red or amber lights.
- L. Guard Rails: Provide guard rails along tops of embankments and excavations. Along public walkways and areas accessible by the public, adjoining excavations, provide guardrails in addition to fencing.
 - 1. Guardrails shall be substantially and durably constructed of lumber, firmly anchored by posts embedded in concrete, and complying with Code requirements for temporary barriers.
 - 2. Guardrails shall comply with dimensional requirements and accommodate loads as prescribed by

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California Building Code (CBC) for permanent guardrails.

- M. Security Closures and Lockup: Provide substantial temporary closures of openings in exterior surfaces and interior areas as appropriate to prevent unauthorized entrance, vandalism, theft and similar violations of security. Provide doors with self-closing hardware and locks.
 - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- N. Weather Closures: Provide temporary weather-tight closures at exterior openings to prevent intrusion of water, to create acceptable working conditions, to protect completed Work and to maintain temporary heating, cooling and ventilation. Provide access doors with self-closing hardware and locks.
- O. Temporary Access, Passage and Exit Ways: Construct temporary stairs, ramps, and covered walkways, with related doors, gates, closures, guardrails, handrails, lighting and protective devices, to maintain access and exit ways to existing facilities to remain operational.
 - 1. Design and location of temporary construction shall be by Contractor, subject to review by University's Representative and authorities having jurisdiction.
 - 2. Provide temporary lighting, illuminated interior exit signage, non-illuminated directional and instructional signage, and temporary security alarms for temporary exits and exit passageways.
 - 3. Temporary measures shall suit and connect to existing building systems, and shall be approved by University's Representative and authorities having jurisdiction.

1.8 **PROTECTION OF INSTALLED WORK**

- A. Protection of Installed Work, General: Provide temporary protection for installed products. Control traffic in immediate area to minimize damage.
- B. Protective Coverings: Provide protective coverings at walls, projections, jambs, sills, and soffits of openings as necessary to prevent damage from construction activities, such as coatings applications, and as necessary to prevent other than normal atmospheric soiling.
- C. Traffic Protection:
 - 1. Protect finished floors, stairs and other surfaces from traffic, soiling, wear and marring.
 - 2. Provide temporary covers of plywood, reinforced kraft paper or temporary rugs and mats, as necessary. Temporary covers shall not slip or tear under normal use.
 - 3. Prohibit traffic and storage on waterproofed and roofed surfaces and on landscaped areas.
 - 4. Protect newly fine graded, seeded and planted areas with barriers and flags to designate such areas as closed to pedestrian and vehicular traffic.

1.9 REMOVAL OF TEMPORARY BARRIERS AND ENCLOSURES

A. Removal of Temporary Barriers and Enclosures: Unless otherwise mutually agreed by University's Representative and Contractor, remove temporary materials, equipment, services, and construction prior to Contract Completion review. Coordinate removal with requirements specified in Section 01510 - Temporary Utilities, Section 01520 - Construction Facilities, Section 01550 - Vehicular Access The California State University San Marcos Project Name here Project No. SM – XXXX Date

and Parking and Section 01560 - Temporary Barriers and Enclosures.

B. Cleaning and Repairs: Clean and repair damage, soiling and marring caused by installation or use of temporary barriers and enclosures.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

Not applicable to this Section.

TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Requirements for protection of existing landscape plant materials, including trees, shrubs and ground covers. Contractor shall preserve, protect, and prune as necessary existing trees and shrubs, and other vegetation indicated to remain.

1.3 RELATED SECTIONS

- A. Section 01560 Temporary Barriers and Enclosures: Barricades and barriers used to protect landscaping.
- B. Section 01570 Temporary Controls: Runoff.
- C. Division 2 Site Construction: Landscaping specifications related to trees, shrubs and ground covers, as applicable.

1.4 WORK DESCRIPTION

- A. Protection: All trees and plant materials to remain on site shall be protected from construction activities. Preserve, protect, and prune as necessary existing trees and shrubs and other vegetation indicated to remain.
- B. Maintenance: Until Contract closeout, Contractor shall irrigate, fertilize, prune and clean as necessary to maintain all existing trees, shrubs and ground covers in healthy condition, within and adjacent to Project area.

1.5 QUALITY ASSURANCE

- A. Arborist: Contractor shall engage and pay a Certified Arborist who will be responsible for supervising implementation of tree and plant protection measures specified in this Section.
 - 1. Arborist shall be subject to acceptance by University's Representative.
 - 2. Arborist registered by the American Society of Consulting Arborists.
 - 3. Submit evidence contract with acceptable Certified Arborist prior to commencing site mobilization activities.

PART 2 - PRODUCTS

2.1 BARRIERS

A. Barriers: As specified in Section 01560 - Temporary Barriers and Enclosures.

2.2 FERTILIZER

- A. Fertilizer: Unless otherwise directed by University's Representative, type and quantity of fertilizer shall be determined by soil agronomist engaged and paid by Contractor, who is acceptable to University's Representative.
 - 1. As basis for bidding, fertilizer shall be (_____) or approved equal at 4 lb. fertilizer dissolved in 100 gallons water.
- B. Accessory Materials: As determined by Contractor as necessary for sustained health of trees and plants, subject to acceptance by University's Representative. Accessory materials shall include mulch, tree and plant stakes and temporary covers.

PART 3 - EXECUTION

3.1 PROTECTION

- A. Protection: Prior to construction activities, especially demolition and excavation, on the site, Contractor shall submit to University's Representative evidence of a contract with a Certified Arborist who shall be responsible for supervising implementation of the following tree protection measures.
 - 1. Protect all existing trees, shrubs and ground covers from stockpiling, material storage including soil, vehicle parking and driving within the tree drip line. Restrict foot traffic to prevent excessive compacting of soil over root systems.
 - 2. Protect root systems of existing trees, shrubs, and ground covers from damage due to chemically injurious materials in solution caused by runoff and spillage during mixing, placement of construction materials, and drainage from stored materials.
 - 3. Protect root system from flooding, erosion, excessive wetting and drying resulting from de-watering and other operations.
 - 4. Above-ground surface runoff shall not be directed into the tree canopy area from adjacent areas. Ensure that sidewalks or other construction do not trap water near the tree. Coordinate with requirements specified in Section 01570 - Temporary Controls.
 - 5. Protect existing plant materials from unnecessary cutting, breaking and skinning of roots and branches, skinning and bruising of bark.
 - 6. Use no soil sterilants under pavement near existing trees.
 - 7. Do not allow fires under and adjacent to existing trees or plants.
- B. Maintenance: Throughout duration of the Contract, Contractor shall be responsible for irrigation, fertilizing, pruning, and other measures necessary to protect and nurture all existing trees, plants, ground covers and lawns indicated to remain in Project.

3.2 PRUNING

A. Pruning: Certified Arborist shall direct removal of branches from trees and large shrubs and correctional pruning and cabling of specified trees which are to remain in Project, if required to clear

new construction and where indicated, and to direct tree root pruning and relocation Work. Procedure for each tree may vary and shall be subject to approval by Certified Arborist and University's Representative prior to commencing Work.

- 1. Where indicated by University's Representative, extend pruning operation to restore natural shape of entire tree using only Western Chapter, ISA Pruning Standards.
- 2. Cut branches and roots with sharp pruning instruments. Do not break, chop, or mutilate.
- 3. Pruning of existing trees shall be limited to removal of all dead wood 1/2-inch or greater in size and removal of vines and sucker growth. Tree cavities existing on all oak trees shall be cleaned of wood rot.
- 4. Tree limbs shall be trimmed or removed only under direction of skilled and experienced supervisor, according to directions of Arborist.

3.3 IRRIGATION

- A. Irrigation: Irrigate trees and other plants to remain, as necessary to maintain their health before, during and after Work under the Contract, as directed by the Consulting Arborist.
 - 1. Maintain an irrigation schedule and document. Submit schedule to University's Representative for review and acceptance.
 - 2. Provide temporary piping, valves, hoses, emitters and spray heads as necessary until Contract closeout.
- B. Soil Preparation: If soil within drip line of trees is compacted, then prior to watering or fertilizing trees, area within the drip lines shall be tilled to break up the top two inches of existing soil.
- C. Tree Irrigation: All trees shall be deep-root watered by the use of an injection needle to a depth of 18inches.
 - 1. Needle shall be inserted into ground at 5-foot intervals in concentric rings around the tree, beginning at trunk. Each ring shall be 4-feet wider than previous one. Process shall continue out to drip line of the tree.
 - 2. For trees greater than 12-inches in caliper, irrigate trees during first month of construction using 1,200 gallons of water per tree.
 - 3. For trees less than 12-inches in caliper, 800 gallons of water shall be used per tree.
 - 4. Repeat procedure every three months until Contract completion.

3.4 FERTILIZING

A. Fertilizing: All trees shall be fertilized before, during, and after construction by pumping under pressure directly 18-inches into root zone as directed by Certified Arborist.

3.5 EXCAVATION AROUND TREES

A. Excavation Around Trees: Excavate within drip lines of trees only where indicated.

- Where trenching for utilities is required within drip lines, tunnel under and around roots of 2-1/2 inches diameter or larger by hand digging. Do not cut main lateral roots that are two inches or larger. Cut smaller roots that are smaller than two inches that interfere with installation of new Work. Use sharp, approved pruning tools. Pipes shall be routed into alternate locations to avoid conflict with remaining tree roots.
- 2. Where excavating for new construction is required within drip lines of trees, hand excavate to minimize damage to root systems. Use narrow tine spading forks and comb soil to expose roots. Relocate roots in backfill areas wherever possible. If large, main lateral roots are encountered, expose beyond excavation limits as required to bend and relocate without breaking.
- 3. If encountered immediately adjacent to location of new construction and relocation is not practical, cut roots approximately six inches back from new construction. Treat and cover cut ends as directed by Certified Arborist.
- 4. Do not allow exposed roots to dry out before permanent backfill is placed. Provide temporary earth cover, pack with wet peat moss or four layers of wet untreated burlap and temporarily support and protect roots from damage until permanently relocated and covered with backfill. Irrigate to eliminate voids and air pockets.
- B. Pruning: Thin branching structure in accordance with Western Chapter, ISA Pruning Standards to balance loss to root system caused by damage or cutting of root system. Thinning shall not exceed 30 percent of existing branching structure.

3.6 GRADING AND FILLING AROUND TREES

- A. Grading and Filling Around Trees: Maintain existing grade within drip line of trees unless otherwise indicated.
 - 1. Grade changes shall be limited to six inches of cut or fill from original grade and shall be accomplished by hand.
 - 2. Under all Quercus and Sequoia trees there shall be no grade change under at least the inner 50% of the tree canopy.
- B. Lowering Grades Around Trees: Where existing grade is above new finish grade shown around trees, carefully hand excavate within drip line to new grade. Cut roots exposed by excavation to approximately three inches below elevation of new finish grade.
- C. Raising Grades Around Trees: Permitted only as acceptable to Certified Arborist and University's Representative.
- D. Other Changes: If building pads or foundations are indicated to be constructed within Project area or if existing landscaping requires alteration due addition of fill or reduced by excavation, notify University's Representative for directions prior to starting Work. Measures as directed by University's Representative, such as addition of small retaining walls or subgrade aeration lines, may be required to mitigate construction procedures affecting tree.

3.7 REPAIR AND REMOVAL OF TREES

A. Repair and Removal of Trees: Certified Arborist and University's Representative will determine

whether trees shall be restored or removed. Treat and restore trees damaged by construction operations in a manner acceptable to University's Representative. Perform restoration and pruning promptly after damage occurs to prevent progressive deterioration of damaged trees. If trees cannot be restored, equitable adjustment to Contract Sum shall be made to compensate University for loss, in accordance with the Contract General Conditions.

- 1. Remove dead and damaged trees that are determined by Certified Arborist to be incapable of restoration to normal growth pattern.
- 2. Contractor shall be liable for all damage and necessary restoration actions to existing trees, including trunk, branches, or roots. Restoration shall be performed under direction of Certified Arborist.

3.8 REPAIR AND REPLACEMENT OF SHRUBS AND GROUND COVER

- A. Repairs and Replacements of Shrubs and Ground Cover: Repair shrubs and other vegetation damaged by construction operation in manner acceptable to University's Representative.
 - 1. Make repairs promptly after damage occurs to prevent progressive deterioration of damaged plant. Remove and replace all dead and damaged plants up to six inch diameter which are determined by University's Representative as being incapable of restoration to normal growth pattern.
 - 2. Provide new shrubs of same size and species as those replaced or as acceptable to the University's Representative.

3.9 COMPENSATION TO UNIVERSITY FOR LOST AND DAMAGED TREES

- A. Compensation to University for Lost and Damaged Trees: Contractor shall be liable for loss in value to damaged trees and trees which are damaged beyond restoration, unless trees are specifically indicated on Contract Drawings to be removed.
- B. All resulting repair or replacement costs, as determined by University's Representative, shall be compensated to University by change order deducting sum from monies owed Contractor.
 - 1. Because of irreplaceable nature of many existing trees, amount of assessment shall be determined by University's Representative after consultation with Certified Arborist, and shall depend upon tree species, condition before damage and location value.
 - 2. Disputed sums shall be governed by applicable provisions of the Contract General Conditions.

TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Protection of existing conditions, including video record of existing conditions.
- B. Life safety and fire protection.
- C. Security.
- D. Runoff control.
- E. Protection of installed Work.

1.3 RELATED SECTIONS

- A. Section 01100 Summary of the Work: Contractor's use of site and premises.
- B. Section 01520 Construction Facilities: Field offices and sheds.
- C. Section 01540 Construction Aids: Temporary lifts and hoists; temporary stairs and scaffolding.
- D. Section 01550 Vehicular Access and Parking: Vehicle access and parking control at Work areas.
- E. Section 01560 Temporary Barriers and Enclosures: Requirements for dust and debris barriers.

1.4 CODES AND REGULATIONS

- A. Fire Regulations: Comply with requirements of fire authorities having jurisdiction, including California Fire Code (CFC) Article 87 during performance of the Work.
- B. Safety Regulations: Contractor shall be solely responsible for jobsite safety. Minimum requirements shall include the following.
 - 1. Comply with requirements of all applicable Federal, State and local safety rules and regulations.
 - 2. Comply with requirements in the University's "Contractor Safety Handbook," provided under separate cover by University's Representative.
- C. Barricades and Barriers: As required by authorities having jurisdiction, provide substantial barriers, guardrails and enclosures around Work areas and adjacent to embankments and excavations for protection of workers and the public. See Section 01560 Temporary Barriers and Controls for additional requirements.

1.5 PROTECTION OF EXISTING CONDITIONS

- A. Protection of Adjacent Facilities: Contractor shall restrict Work to limits indicated on the Drawings and as specified in Section 01100 Summary of the Work. Protect existing, adjacent facilities from damage, including soiling and debris accumulation.
- B. Video Record of Existing Conditions: Contractor shall produce video record of all existing conditions within and adjacent to Project area.
 - 1. Video record shall made on VHS videotape with sound to record comments to identify locations and describe conditions.
 - 2. University's Representative will accompany Contractor during recording of existing conditions but will not direct recording process.
 - 3. Video shall record state of existing features, including but not limited to:
 - a. Paving.
 - b. Landscaping.
 - c. Building surfaces.
 - d. Utilities.
 - e. Lighting standards, fencing, signage and other site appurtenances.
 - f. [_DESCRIPTION_].
 - 4. Contractor shall retain one copy and deliver one copy of video record to University's Representative within seven calendar days after the video record was produced.
 - 5. Video record shall be used to verify restoration of existing conditions after completion of construction activities.
 - 6. Existing feature not recorded shall be restored as directed by University's Representative, including reconstruction and refinishing as determined necessary by University's Representative.

1.6 FIRE PROTECTION

- A. Fire Protection Responsibility: Protection of Project from fire shall be solely Contractor's responsibility.
- B. Fire Protection Provisions, General: Maintain, at a minimum, the Work in conditions to minimize fire hazards and provide adequate fire protection devices, such as suitable fire extinguishers, blankets, warning signs and storage containers.
 - 1. Store combustible materials in containers in fire-safe locations.
 - 2. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
 - 3. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- C. Special Fire Protection Provisions: During hazardous construction activities, maintain adequate fire protection devices immediately available for use at the location of such activities.
- D. Fire Protection Equipment: Until fire protection is provided by permanent fire protection systems and equipment, install and maintain temporary fire protection equipment as necessary to protect against ignition and spread of fires. Comply with NFPA 10 "Standard for Portable Extinguishers" and NFPA

241 "Standard for Safeguarding Construction, Alteration and Demolition Operations."

E. Temporary Fire Sprinkler Provisions: Where existing fire sprinkler system is affected by demolition and

re-construction activities, provide either temporary fire protection measures acceptable to authorities having jurisdiction or modify existing system as necessary to maintain fire protection. Include extensions and additions to standpipe system, for Fire Department connections. Comply with California Fire Code (CFC) Article 87 during all phases of the Work.

- F. Fire Extinguishers for Protection During Construction: Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure.
 - 1. Provide hand carried, portable UL-rated, Class "A" fire extinguishers for temporary offices and similar spaces.
 - 2. In other locations, provide hand-carried, portable, UL-rated, Class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
- G. Installation of Fire Extinguishers for Protection During Construction: Locate fire extinguishers in field offices, storage sheds, tool houses, other temporary buildings and throughout the Work site. Comply with directions of Fire Marshal having jurisdiction.
 - 1. In the area under construction, provide at least one fire extinguisher for each 5,000 square feet of building floor area.
 - 2. Locate fire extinguishers no greater than 100 feet travel distance apart.

1.7 SECURITY

- A. Security Responsibility: Security of the Project area shall be solely the Contractor's responsibility until completion of the Work. Reference Contract General Conditions Article 4.08-c, Protection of Facilities.
- B. Security Provisions, General: Provide security program and facilities to protect Work from unauthorized entry, vandalism, and theft.
- C. Guard Service: At Contractor's discretion, employ guards to protect the site after working hours.

1.8 RUNOFF CONTROL

- A. Erosion and Sedimentation Control: Erosion and sedimentation control provisions shall meet or exceed minimum requirements of authorities having jurisdiction. When provisions are indicated on Drawings, they are minimum requirements. If no sedimentation control system is shown, then Contractor shall design and provide system to prevent siltation of adjacent property as required by authorities having jurisdiction. See Civil Drawings for additional requirements and details.
 - 1. Implement erosion and sedimentation control provisions prior to commencing site clearing, grading, backfilling and compacting or other construction activities which will expose soil to erosion and potential for sediment-laden runoff.
 - 2. Ensure that sediment-laden water does not enter drainage systems.
 - 3. Maintain erosion and sedimentation control provisions until Contract Completion review is completed for landscaping, or sooner if approved by authorities having jurisdiction.

- 4. Implementation, maintenance, replacement and additions to erosion and sedimentation control provisions shall solely be the responsibility of the Contractor. As construction progresses and seasonal conditions dictate, more erosion and sedimentation controls may be required. If so, Contractor shall provide additional provisions over and above minimum requirements as necessary.
- B. Drainage: Grade site and other Work areas to drain.
 - 1. Provide temporary drainage ditches and diversion measures as necessary to protect construction.
 - 2. Provide erosion control measures as necessary and as required by authorities having jurisdiction. Comply with local water quality control requirements, as applicable.
- C. De-Watering: Maintain excavations free of water. Provide and operate pumping equipment as necessary.
 - 1. Removal of contaminated water from excavations, dewatering of contaminated groundwater and discharging of contaminated soils via surface erosion is prohibited.
 - 2. Dewatering of non-contaminated groundwater shall be performed only after Contractor obtains a National Pollutant Discharge Elimination System Permit from the State or Regional Water Quality Control Board having authority. Costs of such permit shall be included in the Contract Sum.
- D. Runoff Control: Storm water runoff and other waters may be encountered at various times during construction. Contractor, by signing the Agreement, acknowledges that risks arising from storm water runoff and other waters have been investigated and considered, and Contract Sum and Contract Time include all costs associated with runoff control.
 - 1. It shall be responsibility of Contractor to protect Work from detrimental effects of all waters encountered.
 - 2. It shall be responsibility of Contractor to protect Work from detrimental effects of runoff.
 - 3. Should damage to the Work due to surface or other water occur prior to acceptance of the Work by University's Representative, Contractor shall repair or replace Work at no change in Contract Time or Contract Sum.
- E. National Pollutant Discharge Elimination System: Contractor shall comply with requirements of environmental protection and storm drainage authorities having jurisdiction.
 - 1. Project Area and other areas affected by Work under the Contract shall be maintained in such condition that anticipated storm runoff does not carry wastes and other pollutants off the site.
 - 2. Discharges of material other than storm water will be allowed only when necessary for performance of the Work and where such discharge does not cause the following:
 - a. Cause or contribute to a violation of applicable water quality standard.
 - b. Cause or threaten to cause pollution, contamination or nuisance, as determined by authorities having jurisdiction. Potential pollutants include but are not limited to:
 - 1) Solid or liquid chemical spills.
 - 2) Wastes from paints, stains, sealants, adhesives, limes, pesticides, herbicides, wood preservatives and solvents.
 - 3) Asbestos fibers, paint flakes or fragments of plaster and drywall.

- 4) Fuels, lubricants, hydraulic fluids, coolants, battery electrolytes.
- 5) Vehicle or equipment, degreasing, steam cleaning and wash water.
- 6) Concrete, mortar and plaster mix and cleaning water.
- 7) Detergents and floatable wastes.
- 8) Superchlorinated potable water line flushings.
- c. Contain hazardous substances in a quantity reportable under Federal Regulations 40 CFR Parts 117 and 302.
- 3. During performance of the Work, disposal of such materials shall occur at a temporary on-site location, physically separated from potential storm water runoff, with ultimate disposal in compliance with all applicable local, regional, State and Federal requirements.
- 4. Contractor shall obtain and comply with Storm Water Pollution Prevention Plan (SWPPP). Contractor shall be responsible for payment of the permit and all fines for non-compliance with the SWPPP, at no change in Contract Sum.
- F. Pavement Clearing and Cleaning: Keep site accessways, parking areas and building access and exit facilities clear of mud.
 - 1. Remove mud, soil and debris and dispose in a manner which will not be injurious to persons, property, plant materials and site.
 - 2. Comply with runoff control requirements stated above and as required by authorities having jurisdiction.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

STORM WATER POLLUTION PREVENTION PLAN

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Preparation and implementation of the Storm Water Pollution Prevention Plan (SWPPP).
- B. Plan administration, maintenance and updates.
- C. Placement of erosion/pollution control devices.
- D. Maintenance and monitoring of control devices.
- E. Non-Storm Water Manager.
- F. Miscellaneous related work necessary for plan compliance.
- G. Reports and certificates.

1.2 REFERENCES

A. Stormwater Best Management Practice Handbook (BMP Handbook), Construction Edition, as published by the California Storm Water Quality Association. Available at www.cabmaphandbooks.com.

1.3 SUBMITTALS

- A. Submit SWPPP under provisions of Section 01330.
- B. Submit SWPPP for review within two weeks after Contract award.
- C. Submit manufacturer's installation instructions for all products.

1.4 QUALITY ASSURANCE

- A. Perform work in accordance with Storm Water Pollution Prevention Plan.
- B. Maintain one copy of document on site.

1.5 REGULATORY REQUIREMENT

A. Prior to the beginning of construction on this site the Owner will file with the State of California, State Water Resources Control Board a Notice of Intent (N.O.I.) that this project will comply with the terms of the State Water Resources Control Board's Order No. 99-08-DWQ, Resolution No. 2001-46 and No. 2001-155 and the National Pollutant Discharge Elimination System (NPDES) General Permit No. CAS000002, Waste Discharge Requirements (WDRs) for discharge of storm water run-off associated with construction activity to include erosion and sediment control.

- B. Comply with requirements of the State's General Permit with regard to the implementation and maintenance of the SWPPP.
- C. Coordinate the SWPPP with the requirements of the Owner's Storm Water Management Plan (SWMP). A copy of the SWMP may be obtained from the Owner upon request.

1.6 PRE-INSTALLATION CONFERENCE

- A. Convene a conference two weeks prior to commencing work at the site, under provisions of Section 01310.
- B. Require attendance of parties directly affecting the work of this Section.
- C. Review requirements of the SWPPP.

1.7 **PERFORMANCE REQUIREMENTS**

- A. The Storm Water Pollution Prevention Plan is a minimum requirement. Revisions and modifications to the SWPPP are acceptable only if they maintain levels of protection equal to or greater than originally specified.
- B. Read and be thoroughly familiar with all of the requirements of the SWPPP
- C. Inspect and monitor all work and storage areas for compliance with the SWPPP prior to any anticipated rain.
- D. Complete any and all corrective measures as may be directed by the regulatory agency.
- E. Penalties: Pay any fees and be liable for any other penalties that may be imposed by the regulatory agency for non-compliance with SWPPP during the course of work.
- F. Costs: Pay all costs associated with the implementation of the requirements of the SWPPP in order to maintain compliance with the Permit. This includes installation of all Housekeeping BMPs, General Site and Material Management BMPs, Bi-weekly Inspection requirements, maintenance requirements, and all other requirements specified in the SWPPP.

PART 2 PRODUCTS

2.1 MATERIALS

- A. All temporary and permanent storm water pollution prevention facilities, equipment, and materials as required by or as necessary to comply with the SWPPP as described in the BMP Handbook.
- B. Substitutions: Under provisions of Section 01630.

PART 3 EXECUTION

3.1 PREPARATION AND APPROVAL

A. Prepare Storm Water Pollution Prevention Plan (SWPPP) as required to comply with storm water pollution regulations.
B. Prepare SWPPP by following the format in Appendix 2 of the Stormwater Best Management Practice Handbook (BMP Handbook), January 2003 edition, published by the Storm Water Quality Association.

3.2 GENERAL IMPLEMENTATION REQUIREMENTS

- A. All measures required by the SWPPP shall be implemented concurrent with the commencement of construction. Pollution practices and devices shall be followed or installed as early in the construction schedule as possible with frequent upgrading of devices as construction progresses.
- B. Conduct an inspection of all erosion control and pollution prevention devices prior to any anticipated storm event to verify all SWPPP measures are in place and to identify and mitigate any new potential pollution sources brought by the ongoing construction.
- C. After storm events, conduct an inspection of the project site to verify the performance of the erosion control and pollution prevention devices in reducing pollutant loading of the discharged storm water associated with the construction activity.
- D. Eliminate or reduce to the extent feasible the discharge of materials other than storm water to the storm drain system and/or receiving waters as dictated by the State General Permit and SWPPP

3.3 IMPLEMENTATION REQUIREMENTS DURING THE NON-RAINY SEASON

- A. The non-rainy season in the State of California is between April 1 and September 30.
- B. All requirements of the SWPPP shall apply during the non-rainy season except for erosion control BMPs.
- C. In the event of an unusual rain event during the non-rainy season, provide erosion control BMPs.

3.4 IMPLEMENTATION REQUIREMENTS DURING THE RAINY SEASON

- A. The rainy season in the State of California is between October 1 and March 31.
- B. All requirements of the SWPPP shall apply during the rainy season without exception.

3.5 **REPORTING**

- A. Prepare all inspection records for each inspection done prior to and just after all storm events as required by the SWPPP with two copies forwarded to the Owner and the Architect.
- B. Prepare the overall certification based upon the inspection reports for Owner's use in the certifying the project site's compliance with the SWPPP and the State's General Permit.

3.6 COMPLETION OF WORK

A. Clean-up shall be performed as each portion of the work progresses. All refuse, excess material, and possible pollutants shall be disposed of in a legal manner off-site and all temporary and permanent SWPPP devices shall be in place and maintained in good condition.

B. At completion of work, inspect installed SWPPP devices, and present the currently implemented SWPPP with all backup records to the Owner.

3.7 EROSION CONTROL PLAN

- A. Refer to Erosion Control Plan that is included in the Contract Documents as a guide for site erosion and sediment control.
- B. Include Erosion Control Plan as a part of the final SWPPP.

PROJECT IDENTIFICATION AND SIGNAGE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. On-site Project identification and temporary informational signs provided by University and maintained by Contractor during Contract.

1.3 RELATED SECTIONS

- A. Section 01520 Construction Facilities: Coordination of signage with field offices and sheds.
- B. Section 01550 Vehicular Access and Parking: Coordination of signage with construction parking
- C. Section 01560 Temporary Barriers and Enclosures: Temporary wood barriers and enclosures with directional signage.
- D. Section 01567 Security Measures: Personnel identification badges.

1.4 SUBMITTALS

A. Shop Drawings: In compliance with directions from University's Representative, Contractor shall prepare and submit site plan locating temporary project identification and informational signs furnished by University.

PART 2 - PRODUCTS

2.1 SIGN MATERIALS

- A. Sign Structure and Framing: Contractor shall provide new materials, wood or metal, structurally adequate to support sign panel and suitable for specified finish.
- B. Sign Surfaces: Sign surfaces shall be minimum 3/4-inch thick, exterior grade, softwood plywood with medium or high-density phenolic sheet overlay, standard large sizes to eliminate joints. Contractor shall provide sheet thickness as required to span across framing members and provide even, smooth surface without waves or buckles.
- C. Rough Hardware: Rough hardware shall be hot-dip galvanized steel.
- D. Paint, Sign Face: Paint used for Sign Face shall be exterior quality primer and gloss enamel finish, as customarily used for sign painting, adequate to resist weathering and fading for the scheduled construction period.
- E. Paint, Sign Structure: Paint used for Sign Structure shall be exterior quality, primer and flat finish paint,

adequate to resist weathering and fading for scheduled construction period.

2.2 PROJECT IDENTIFICATION SIGN

- A. Project Identification Sign: As directed, Contractor shall provide one 4-foot by 8-foot painted Project Identification Sign of the size and construction indicated on graphic to be provided by Architect.
 - 1. Graphic design, text, style of lettering, and colors of sign shall be as directed; assume four colors and special graphic for Project title.
 - 2. Sign shall identify project name, project number, University's name, Architect's name and Contractor's name.
 - 3. Sign shall include corporate logos of parities identified on sign.
- C. Project Address Signs: Provide Project name and street address signs, minimum of four feet wide, to identify Project to facilitate deliveries.
 - 1. Graphic design and colors of sign shall match Project Identification Sign.
 - 2. Text on sign shall be as directed.
- D. Sign Painting: Sign Panels shall be shop painted and field installed by Contractor.
 - 1. Contractor shall ensure that professional sign painters perform sign painting. Silkscreen method is recommended in order to accurately depict graphics.
 - 2. Contractor shall paint back and edges of sign panels for complete weather resistance and finished appearance.

2.3 PROJECT INFORMATIONAL SIGNS

- A. Restrictions: Contractor shall not display signs other than Project Identification Sign specified above and Project Informational Signs specified below without written approval of University's Representative.
- B. Project Informational Signs: Informational signs, necessary for conduct of construction activities or required by governmental authorities having jurisdiction, may be displayed when in conformance to sign construction and graphic requirements specified in this Section.
 - 1. University's Representative may review such signs. If so, review will be for sign construction, and graphic designs only.
 - 2. Adequacy of signage for safety and conformance to requirements of authorities having jurisdiction and trade practices shall be solely Contractor's responsibility.
- C. Sign Painting: Contractor shall ensure that informational signage shall be produced by professional sign painters and be of size and lettering style consistent with use. Colors shall be as required by authorities having jurisdiction and, if not otherwise required, of colors consistent with Project graphics.
 - 1. Sign Face Finish: Sign face finish shall be gloss enamel.
 - 2. Structure Finish: Sign structure finish shall be paint exposed surfaces of supports and framing members one coat of primer and one coat of exterior paint, flat finish.

PART 3 – EXECUTION

3.1 PROJECT IDENTIFICATION SIGN INSTALLATION

- A. Project Identification Sign Construction: Contractor shall construct sign support structure and install panels in durable manner, to resist high winds.
- B. Project Identification Sign Installation: Contractor shall erect Project Identification Sign on site at a lighted location of high public visibility, adjacent to the main entrance to the site, as approved by University's Representative.

- 1. Contractor shall install sign at height for optimum visibility, on ground-mounted poles or attached to portable structure on skids.
- 2. Portable structure shall resist overturning force of wind.
- C. Street Address Signs: Contractor shall locate and install signs at each access point from public streets.
- D. Field Painting: Contractor shall paint all surfaces and edges of sign face and support structure for finished appearance.

3.2 PROJECT INFORMATIONAL SIGN INSTALLATION

- A. Project Informational Signs Construction: Contractor shall construct sign support structure and install panels in durable manner, to resist high winds.
- B. Project Informational Sign Installation:
 - 1. Contractor shall locate signs as necessary for construction activities and as required by authorities having jurisdiction.
 - 2. Contractor shall install informational signs for optimum visibility, on ground-mounted posts or temporarily attached to surfaces of structures.
 - 3. Attachment methods shall leave no permanent disfiguration or discoloration on completed work.
- C. Field Painting: Contractor shall paint all surfaces and edges of sign face and support structure for finished appearance.

3.3 SIGNS MAINTENANCE

- A. Signs Maintenance: Contractor shall maintain signs and supports in a neat, clean condition. Contractor shall repair all damage and weathering to structure, framing and signage.
- B. Sign Relocation: Contractor shall relocate signs as required by progress of the work.

3.4 REMOVAL

- A. Project Identification Sign Removal: Contractor shall remove Project Identification Sign when directed. Contractor shall coordinate removal with requirements specified in Section 01510 – Temporary Utilities, Section 01520 – Construction Facilities, Section 01550 – Vehicular Assess and Parking and Section 01560 – Temporary Barriers and Enclosures.
- B. Project Informational Signs Removal: Contractor shall remove all informational signs, framing, supports and foundations prior to Contract Completion review. Contractor shall coordinate removal with requirements specified in Section 01510 Temporary Utilities, Section 01520 Construction Facilities, Section 01550 Vehicular Access and Parking and Section 01560 Temporary Barriers and Enclosures.

BASIC PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. General requirements for products used for the Work, including:
 - 1. General characteristics of products
 - 2. Product options
 - 3. System completeness
 - 4. Transportation and handling requirements
 - 5. Storage and protection of products
 - 6. Installation of products.

1.3 RELATED SECTIONS

- A. Section 01330 Submittals Procedures: Requirements applicable to submittals for "or equal" and substitute products.
- B. Section 01410 Regulatory Requirements: Codes and standards applicable to product specifications; minimum requirements.
- C. Section 01420 Reference Standards and Abbreviations: References to various standards, standard specifications, codes, practices and other requirements.
- A. Section 01630 Product Substitution Requirements: Requirements for product substitutions.
- B. Section 01640 Owner-Furnished Products: Requirements for installing products furnished by University.
- C. Section 01650 Product Delivery Requirements: General requirements for delivery of products to Project site.
- D. Section 01660 Product Storage and Handling Requirements: General requirements for storage and handling of products.

1.4 GENERAL PRODUCT REQUIREMENTS

- A. Products, General: "Products" include items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock, and include materials, equipment, assemblies, fabrications and systems.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model designations indicated in the manufacturer's published product data.
 - 2. Materials: Products that are shaped, cut, worked, mixed, finished, refined or otherwise

fabricated, processed or installed to form a part of the Work.

- 3. Equipment: A product with operating parts that are motorized or manually operated and require connections such as wiring or piping.
- B. Specific Product Requirements: Refer to requirements of Section 01450 Quality Control and individual product Specifications Sections in Divisions 2 through 17 for specific requirements for products.
- C. Minimum Requirements: Specified requirements for products are minimum requirements. Refer to general requirements for quality of the Work specified in Section 01450 Quality Control and elsewhere herein.
- D. Product Selection: Provide products that fully comply with the Contract Documents, are undamaged and unused at installation. Comply with additional requirements specified herein in Article titled "PRODUCT OPTIONS".
- E. Standard Products: Where specific products are not specified, provide standard products of types and kinds that are suitable for the intended purposes and that are usually and customarily used on similar projects under similar conditions. Products shall be as selected by Contractor and subject to review and acceptance by the Architect.
- F. Product Completeness: Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect. Comply with additional requirements specified herein in Article titled "SYSTEM COMPLETENESS".
- G. Code Compliance: All products, other than commodity products prescribed by Code, shall have a current ICBO Evaluation Service (ICBO ES) Research Report or National Evaluation, Inc. Report (NER). Refer to additional requirements specified in Section 01410 Regulatory Requirements.
- H. Interchangeability: To the fullest extent possible, provide products of the same kind from a single source. Products required to be supplied in quantity shall be the same product and interchangeable throughout the Work. When options are specified for the selection of any of two or more products, the product selected shall be compatible with products previously selected.
- I. Product Nameplates and Instructions:
 - 1. Except for required Code-compliance labels and operating and safety instructions, locate nameplates on inconspicuous, accessible surfaces. Do not attach manufacturer's identifying nameplates or trademarks on surfaces exposed to view in occupied spaces or to the exterior.
 - 2. Provide a permanent nameplate on each item of service-connected or power-operated equipment. Nameplates shall contain identifying information and essential operating data such as the following example:
 - Name of manufacturer Name of product Model and serial number Capacity Operating and Power Characteristics Labels of Tested Compliance with Codes and Standards
 - 3. For each item of service-connected or power-operated equipment, provide operating and safety instructions, permanently affixed and of durable construction, with legible machine lettering. Comply with all applicable requirements of authorities having jurisdiction and listing agencies.

- J. Mechanical Product Requirements: Comply with requirements specified in Division 15 Mechanical.
- K. Electrical Product Requirements: Comply with requirements specified in Division 16 Electrical.

1.5 **PRODUCT OPTIONS**

- A. Product Options: Refer to Contract General Conditions and Supplemental General Conditions, Article 5.04. Provisions of Public Contract Code Section 03400 shall apply, as supplemented by the following general requirements.
- B. Products Specified by Description: Where Specifications describe a product, listing characteristics required, with or without use of a brand name, provide a product that has the specified attributes and otherwise complies with specified requirements.
- C. Products Specified by Performance Requirements: Where Specifications require compliance with performance requirements, provide product(s) that comply and are recommended by the manufacturer for the intended application. Verification of manufacturer's recommendations may be by product literature or by certification of performance from manufacturer.
- D. Products Specified by Reference to Standards: Where Specifications require compliance with a standard, provided product shall fully comply with the standard specified. Refer to general requirements specified in Section 01420 Reference Standards and Abbreviations regarding compliance with referenced standards, standard specifications, codes, practices and requirements for products.
- E. Products Specified by Identification of Manufacturer and Product Name or Number:
 - 1. Sole, source, no other product shall be accepted: Provide the specified product(s) of the specified manufacturer.
 - 2. "Acceptable Manufacturers": Product(s) of the named manufacturers, if equivalent to the specified product(s) of the specified manufacturer, will be acceptable in accordance with the requirements specified herein in the Article titled "OR EQUAL' PRODUCTS."
 - 3. Unnamed manufacturers: Products of unnamed manufacturers will be acceptable only as follows:
 - a. Unless specifically stated that equals will not be accepted or considered, the phrase "or equal" shall be assumed to be included in the description of specified product(s). Equivalent products of unnamed manufacturers will be accepted in accordance with the "or equal" provision specified herein, below.
 - b. If provided, products of unnamed manufacturers shall be subject to the requirements specified herein in the Article titled "OR EQUAL' PRODUCTS."
 - 4. Quality basis: Specified product(s) of the specified manufacturer shall serve as the basis by which products by named acceptable manufacturers and products of unnamed manufacturers will be evaluated. Where characteristics of the specified product are described, where performance characteristics are identified or where reference is made to industry standards, such characteristics are specified to facilitate evaluation of products by identifying the most significant attributes of the specified product(s).
- F. Products Specified by Combination of Methods: Where products are specified by a combination of attributes, including manufacturer's name, product brand name, product catalog or identification number, industry reference standard, or description of product characteristics, provide products

conforming to all specified attributes.

- G. "Or Equal" Provision: Where the phrase "or equal" or the phrase "or approved equal" is included, product(s) of unnamed manufacturer(s) may be provided as specified above in subparagraph titled "Unnamed manufacturers."
 - 1. The requirements specified herein in the Article titled "'OR EQUAL' PRODUCTS" shall apply to products provided under the "or equal" provision.
 - 2. Use of product(s) under the "or equal" provision shall not result in any delay in completion of the Work, including completion of portions of the Work for use by University or for work under separate contract by University.
 - 3. Use of product(s) under the "or equal" provision shall not result in any costs to University, including design fees and permit and plan check fees.
 - 4. Use of product(s) under the "or equal" provision shall not require substantial change in the intent of the design, in the opinion of the Architect. The intent of the design shall include functional performance and aesthetic qualities.
 - 5. The determination of equivalence will be made by the Architect, and such determination shall be final.
- H. Visual Matching: Where Specifications require matching a sample, the decision by the Architect on whether a proposed product matches shall be final. Where no product visually matches, but the product complies with other requirements, comply with provisions for substitutions for selection of a matching product in another category.
- I. Selection of Products: Where requirements include the phrase "as selected from manufacturer's standard colors, patterns and textures", or a similar phrase, selections of products will be made by indicated party or, if not indicated, by the Architect. The Architect will select color, pattern and texture from the product line of submitted manufacturer, if all other specified provisions are met.

1.6 "OR EQUAL" PRODUCTS

- A. "Or Equal" Products: Products are specified typically by indicating a specified manufacturer and specific products of that manufacturer, with acceptable manufacturers identified with reference to this "or equal" provision. If Contractor proposes to provide products other than the specified products of the specified manufacturer, provisions of any relevant Supplementary General Conditions, Contract General Conditions Article 5.04, and Public Contract Code section 3400 shall apply. Contractor shall submit if and when directed by Architect, complete product data, including drawings and descriptions of products, fabrication details and installation procedures. Include samples where applicable or requested.
 - 1. Submit a minimum of four copies. Form and other administrative requirements shall be as directed by the Architect.
 - 2. Include appropriate product data for the specified product(s) of the specified manufacturer, suitable for use in comparison of characteristics of products.
 - a. Include a written, point-by-point comparison of characteristics of the proposed equal product with those of the specified product.
 - b. If the proposed equal is accepted, Contractor shall include a detailed description in written or graphic form as appropriate, indicating all necessary changes or modifications to other elements of the Work and to construction to be performed by the University and others under separate contract with University.

- 3. "Or Equal" product submissions shall include a statement indicating the equal's effect on the Construction Schedule. Contractor shall indicate the effect of the proposed products on overall Contract Time and, as applicable, on completion of portions of the Work for use by University or for work under separate contract by University.
- 4. "Or Equal" product submissions shall include signed certification that the Contractor has reviewed the proposed products and has determined that the products are equivalent or superior in every respect to product requirements indicated or specified in the Contract Documents, and that the proposed products are suited for and can perform the purpose or application of the specified product indicated or specified in the Contract Documents.
- 5. "Or Equal" product submissions shall include a signed waiver by the Contractor for change in the Contract Time or Contract Sum because of the following:
 - a. "Or equal" product failed to perform adequately.
 - b. "Or equal" product required changes in on other elements of the Work.
 - c. "Or equal" product caused problems in interfacing with other elements of the Work.
- 6. If, in the opinion of the Architect, the "or equal" product request is incomplete or has insufficient data to enable a full and thorough review of the proposed products, the proposed products may be summarily refused and determined to be unacceptable.
- B. Product Substitutions: For products not governed by the "or equal" provision, comply with substitution provisions of the Contract General Conditions and Supplemental General Conditions (Article 5.04-d, Substitutions) and requirements specified in Section 01630 Product Substitution Procedures.

1.7 SYSTEM COMPLETENESS

- A. System Completeness
 - 1. The Contract Drawings and Specifications are not intended to be comprehensive directions on how to produce the Work. Rather, the Drawings and Specifications are instruments of service prepared to describe the design intent for the completed Work.
 - 2. It is intended that all equipment, systems and assemblies be complete and fully functional even though not fully described. Provide all products and operations necessary to achieve the design intent described in the Contract Documents.
 - 3. Refer to related general requirements specified in Section 01410 Regulatory Requirements regarding compliance with minimum requirements of applicable codes, ordinances and standards.
- B. Omissions and Mis-descriptions: Contractor shall report to Architect immediately when elements essential to proper execution of the Work are discovered to be missing or mis-described in the Drawings and Specifications or if the design intent is unclear.
 - 1. Should an essential element be discovered as missing or mis-described prior to receipt of Bids, an Addendum will be issued so that all costs may be accounted for in the Contract Sum.
 - 2. Should an obvious omission or mis-description of a necessary element be discovered and reported after execution of the Agreement, Contractor shall provide the element as though fully and correctly described, and a no-cost Change Order shall be executed.
 - 3. Refer to related general requirements specified in Section 01310 Coordination regarding construction interfacing and coordination.

1.8 TRANSPORTATION, DELIVERY AND HANDLING

A. Transportation, Delivery and Handling, General: Contractor shall comply with manufacturer's instructions and recommendations for transportation, delivery and handling, in addition to the following.

- B. Transportation: Contractor shall transport products by methods to avoid product damage.
- C. Delivery:
 - 1. Contractor shall schedule delivery to minimize long-term storage and prevent overcrowding construction spaces. Contractor shall coordinate with installation to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
 - 2. Contractor shall deliver products in undamaged condition in manufacturer's original sealed container or packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
- D. Handling:
 - 1. Contractor shall provide equipment and personnel to handle products by methods to prevent soiling, marring or other damage.
 - 2. Contractor shall promptly inspect products on delivery to ensure that products comply with Contract Documents, quantities are correct, and to ensure that products are undamaged and properly protected.

1.9 STORAGE AND PROTECTION

- A. Storage and Protection, General: Contractor shall store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Contractor shall periodically inspect to ensure products are undamaged, and are maintained under required conditions.
 - 2. Contractor shall remove and replace products damaged by improper storage or protection with new products at no change in Contract Sum or Contract Time.
 - 3. Contractor shall store sensitive products in weather tight enclosures.
- B. Inspection Provisions: Contractor shall arrange storage to provide access for inspection and measurement of quantity or counting of units.
- C. Structural Considerations: Contractor shall store heavy materials away from the structure in a manner that will not endanger supporting construction.
- D. Weather-Resistant Storage:
 - 1. Contractor shall store moisture-sensitive products above ground, under cover in a weather tight enclosure or covered with an impervious sheet covering. Contractor shall provide adequate ventilation to avoid condensation.
 - 2. Contractor shall maintain storage within temperature and humidity ranges required by manufacturer's instructions.
 - 3. For exterior storage of fabricated products, Contractor shall place products on raised blocks, pallets or other supports, above ground and in a manner to not create ponding or misdirection of runoff. Contractor shall place on sloped supports above ground.
 - 4. Contractor shall store loose granular materials on solid surfaces in a well-drained area. Contractor shall prevent mixing with foreign matter.
- E. Protection of Completed Work:
 - 1. Contractor shall provide barriers, substantial coverings and notices to protect installed Work from traffic and subsequent construction operations.

- 2. Contractor shall remove protective measures when no longer required and prior to Contract Completion review of the Work.
- 3. Contractor shall comply with additional requirements specified in Section 01560 Temporary Barriers and Enclosures.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

- A. Installation of Products:
 - 1. Contractor shall comply with manufacturer's instructions and recommendations for installation of products, except where more stringent requirements are specified and necessary due to Project conditions or are required by authorities having jurisdiction.
 - 2. Contractor shall anchor each product securely in place, accurately located and aligned with other Work.
 - Contractor shall clean exposed surfaces and provide protection to ensure freedom from damage and deterioration at time of Contract Completion review. Contractor shall refer to additional requirements specified in Section 01740 - Cleaning Requirements and Section 01560 -Temporary Barriers and Enclosures.

PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. General requirements applicable to substitutions of materials, products, equipment and systems.

1.3 SUBSTITUTION OF MATERIALS AND EQUIPMENT

- A. Substitutions, General: Catalog numbers and specific brands or trade names are used in materials, products, equipment and systems required by the Specifications to establish the standards of quality, utility and appearance required. Alternative products which are of equal quality and of required characteristics for the purpose intended may be proposed for use provided the Contractor complies with provisions of Contract General Conditions and Supplemental General Conditions, Article 5.04., subject to the following provisions.
 - 1. See Section 01610 Basic Product Requirements for requirements regarding product options.
 - 2. Substitutions will only be authorized by properly executed Change Order or Field Instruction.
 - 3. The time for submitting a proposed product for substitution or as "an equal" is no later than ten (10) days prior to bid opening (Public Contract Code section 3400).
 - 4. Note: the Trustees have no obligation to entertain substitutions.
- B. Substitution Provisions:
 - 1. Documentation: Substitutions will not be considered if they are indicated or implied on shop drawing, product data or sample submittals. All requests for substitution shall be by separate written request from Contractor. See paragraph below for documentation required in the submission of request for substitution.
 - 2. Cost and Time Considerations: Substitutions will not be considered unless a net reduction in Contract Sum or Contract Time results to University's benefit, including redesign costs, life cycle costs, plan check and permit fees, changes in related Work and overall performance of building systems.
 - 3. Design Revision: Substitutions will not be considered if acceptance will require substantial revision of the Contract Documents or will substantially change the intent of the design, in the opinion of the Architect. The intent of the design shall include functional performance and aesthetic qualities.
 - 4. Data: It shall be the responsibility of the Contractor to provide adequate data demonstrating the merits of the proposed substitution, including cost data and information regarding changes in

related Work.

- 5. Determination by Architect: Architect and University's Representative will determine the acceptability of proposed substitutions, and University's Representative will notify Contractor in writing of acceptance or rejection. The determination by the Architect regarding functional performance and aesthetic quality shall be final.
- 6. Non-Acceptance: If a proposed substitution is not accepted, Contractor shall immediately provide the specified product.
- 7. Substitution Limitation: Only one request for substitution will be considered for each product.
- C. Request for Substitution Procedures: Comply with provisions of Contract General Conditions, Article 5.04 and the following.
 - 1. Contractor shall prepare a request for substitution and submit the request to Architect through University's Representative for review and recommendation for acceptance. Acceptance and approval of substitutions shall be by University's Representative.
 - a. Submit a minimum of four copies.
 - b. Present the request for substitution using form provided by University's Representative.
 - c. Comply with other administrative requirements shall be as directed by University's Representative.
 - 2. Substitution requests shall include complete product data, including drawings and descriptions of products, fabrication details and installation procedures. Include samples where applicable or requested.
 - 3. Substitution requests shall include appropriate product data for the specified product(s) of the specified manufacturer, suitable for use in comparison of characteristics of products.
 - a. Include a written, point-by-point comparison of characteristics of the proposed substitute product with those of the specified product.
 - b. Include a detailed description, in written or graphic form as appropriate, indicating all changes or modifications needed to other elements of the Work and to construction to be performed by the University and by others under separate contracts with University that will be necessary if the proposed substitution is accepted.
 - 4. Substitution requests shall include a statement indicating the substitution's effect on the Construction Schedule. Indicate the effect of the proposed substitution on overall Contract Time and, as applicable, on completion of portions of the Work for use by University or for work under separate contracts by University.
 - 5. Except as otherwise specified, substitution requests shall include detailed cost data, including a proposal for the net change, if any, in the Contract Sum.
 - 6. Substitution requests shall include signed certification that the Contractor has reviewed the proposed substitution and has determined that the substitution, in combination with the cost or time savings, represents an equivalent or superior condition in every respect to product requirements and value indicated or specified in the Contract Documents, and that the substitution is suited for and can perform the purpose or application of the specified product indicated or specified in the Contract Documents.
 - 7. Substitution requests shall include a signed waiver by the Contractor for change in the Contract Time or Contract Sum because of the following:

- a. Substitution failed to perform adequately.
- b. Substitution required changes in on other elements of the Work.
- c. Substitution caused problems in interfacing with other elements of the Work.
- d. Substitution was determined to be unacceptable by authorities having jurisdiction.
- 8. If, in the opinion of the Architect, the substitution request is incomplete or has insufficient data to enable a full and thorough review of the intended substitution, the substitution may be summarily refused and determined to be unacceptable.
- D. Contract Document Revisions:
 - Should a Contractor-proposed substitution or alternative sequence or method of construction require revision of the Contract Drawings or Specifications, including revisions for the purposes of determining feasibility, scope or cost, or revisions for the purpose of obtaining review and approval by authorities having jurisdiction, Architect or other consultant of University who is the responsible design professional will make revisions as approved in writing in advance by University's Representative.
 - 2. Contractor shall pay for services of Architect, other responsible design professionals and University for researching and reporting on proposed substitutions or alternative sequence and method of construction when such activities are considered additional services to the design services contracts of Architect or other responsible design professional with University.
 - 3. Contractor shall pay for costs of services by Architect, other responsible design professionals and University. These costs may include travel, reproduction, long distance telephone and shipping costs reimbursable at cost plus usual and customary mark-up for handling and billing.
 - 4. Contractor shall pay such fees whether or not the proposed substitution or alternative sequence or method of construction is ultimately accepted by University and a Change Order is executed.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

SECTION 01630A EQUAL OR SUBSTITUTION REQUEST

Project:	Substitution Request Number:		
	From:		
То:	Date:		
	A/E Project N	umbe <u>r:</u>	
Re:	Contract For:		
Specification Title:			Description:
Section: Page:	Article/Parage	raph:	
Proposed Substitution:			
Manufacturer: Address:		Phone:	
Trade Name:		Model No.:	
Installer:		Address:	Phone:
Point-by-point comparative data attached - REQU Reason for not providing specified item: Similar Installation: Project:	Architect:		
//dd/000	Date Installed:		
Proposed substitution affects other parts of Work:	☐ No ☐ Yes; explain_		
Savings to Owner for accepting substitution:		(\$	\$ <u>).</u>
Proposed substitution changes Contract Time: No Supporting Data Attached: Drawings Prod	D ☐ Yes [Add] [Deduct	:] <u>days.</u> ∏Tests □F	Reports

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by:			
Signed by:			
Firm:			
Address:			
Telephone:			
Attachments:			

A/E's REVIEW AND ACTION

Substitution approved	 Make submittals in 	accordance with S	pecification Section 01330.
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Substitution approved as noted - Make submittals in accordance with Specification Section 01330.

- Substitution rejected Use specified materials.
- Substitution Request received too late Use specified materials.

Signed by:			Date:
Additional Comments:	Contractor	Subcontractor Supplier	🗌 Manufacturer 🔲 A/E 🗌

OWNER-FURNISHED PRODUCTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Requirements for installing Owner-furnished products, including providing miscellaneous items and accessories for a complete, functioning installation.

1.3 RELATED SECTIONS

A. Section 01580 - Project Identification and Signage: Owner-furnished, Contractor-installed (OFCI) temporary signage.

1.4 **PRODUCT HANDLING**

- A. Protection: Contractor shall use means necessary to protect the materials of this Section before, during, and after installation and to protect completed Work, including products installed by others.
- B. Replacements: In the event of damage, Contractor shall immediately repair all damaged and defective Work to satisfaction of University's Representative, at no change in Contract Time and Contract Sum.

PART 2 - PRODUCTS

2.1 OWNER-FURNISHED/CONTRACTOR-INSTALLED (OFCI) PRODUCT REQUIRTEMENTS

- A. Products Identified with Contractor Responsibility for Installation:
 - 1. Contractor shall verify mounting and utility requirements for accepted products.
 - 2. Contractor shall provide mounting and utility rough-ins for OFCI products.
 - a. Rough-in locations, sizes, capacities and similar type shall be as indicated and required by product manufacturers.
 - b. If the University substitutes items similar to those scheduled there shall be no change in rough-in cost, unless substitution occurs after rough-in has been completed or rough-in involves other mounting requirements, utilities of different capacity than those required by item originally specified.
 - 3. For items Designated to Be Owner- or Vendor-Furnished: University or its vendor will furnish manufacturer's literature or information, shop drawings, or appropriate information for preparing required shop drawings.
- B. Installation Instructions: Approved manufacturer's printed descriptions, specifications and recommendations shall govern the Work, unless specifically indicated otherwise.

- C. Electrical Components: Contractor shall comply with requirements specified in Division 16 Electrical, including California Electrical Code (CEC).
- D. Plumbing and HVAC Components: Contractor shall comply with requirements specified in Division 15 - Mechanical, including California Plumbing Code (CPC) and California Mechanical Code (CMC).

2.2 OWNER-FURNISHED/CONTRACTOR-INSTALLED PRODUCTS

- A. Products be furnished by the University:
 - 1. (DESCRIPTION)
 - 2. (DESCRIPTION)
 - 3. (DESCRIPTION)
 - 4. (DESCRIPTION)
 - 5. (DESCRIPTION)

2.3 OWNER-FURNISHED/CONTRACTOR-INSTALLED PRODUCT COORDIANTION REQUIREMENTS

- A. Products Furnished by University and Installed by Contractor:
 - 2. Contractor shall coordinate delivery of OFCI products. University will furnish products to coincide with construction schedule.
 - 3. University will:
 - a. Furnish standard integral components of products.
 - b. Deliver products to site.
 - 4. The Contractor shall:
 - a. Receive products at site and give written receipt for product at time of delivery, noting visible defects and omissions; if such declaration is not given, the Contractor shall assume responsibility for such defects and omissions.
 - b. Store products until ready for installation and protect from loss and damage.
 - c. Uncrate, assemble and set products in place.
 - d. Install products in accordance with manufacturer's recommendations, instructions and shop drawings under supervision of manufacturer's representative where specified, supplying labor and material required and making mechanical, plumbing and electrical connections necessary to operate equipment.
 - e. Where so specified, installation shall be only by installer approved by manufacturer. If known, approved installer is identified on the Drawings or in the Specifications.
 - f. Provide and install backing for all products weighing 20 pounds or more.
- B. Products Furnished and Installed by University:
 - 1. Contractor prepare; vendor install:
 - a. General: Contractor shall coordinate deliveries of vendor-supplied products. Vendor will furnish products to coincide with the construction schedule.
 - b. Vendor will:
 - 1) Furnish standard integral components of products.
 - 2) Deliver products to site.
 - 3) Make connections to roughed-in utilities.
 - c. Contractor shall:

- Arrange for pick-up of products at University Shipping and Receiving warehouse and transport products to site and give written notice of receipt of each product at time of delivery, noting visible defects. The University will not provide warehousing or loading or unloading equipment.
- 2) Provide rough-in of utility products in accordance with manufacturer's recommendations, instructions and shop drawings under supervision of the manufacturer's representative where specified.
- 3) Provide and install backing for all products weiging 20 pounds or more.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS

- A. Inspection:
 - 1. Prior to commencing Work, Contractor shall verify that Work specified in other Sections has been properly completed and installed as specified to allow for installation of all materials and methods required of this Section.
 - 2. Contractor shall verify that new and existing products and conditions are satisfactory for installation or relocation of OFCI products. If unsatisfactory conditions exist, do not commence the installation until such conditions have been corrected.
- B. Discrepancies:
 - 1. In the event of discrepancy, Contractor shall immediately notify the University's Representative.
 - 2. Contractor shall not proceed with installation in areas of discrepancy until all such discrepancies have been resolved.

3.2 INSTALLATION

- A. Contractor shall relocate and reinstall existing products in accordance with Contract Documents and reviewed shop drawings, original manufacturer's instructions and recommendations if applicable and as directed.
- B. Contractor shall install Owner-furnished products in accordance with reviewed shop drawings and manufacturer's printed instructions, as applicable.

3.3 ADJUSTING AND CLEANING

- A. Contractor shall adjust products as necessary and as directed by University's Representative.
- B. Contractor shall clean all new and relocated OFCI products.
- C. Contractor shall protect OFCI products from damage until Contract Completion.

PRODUCT DELIVERY REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Protect products scheduled for use in the work by means including, but not necessarily limited to, those described in this Section.

1.3 RELATED SECTIONS

- A. Section 01610 Basic Product Requirements: Qualitative requirements for products.
- B. Section 01660 Product Storage and Handling Requirements: Requirements for protection of products after delivery.

1.4 QUALITY ASSURANCE

- A. Contractor's Quality Assurance: Contractor shall include within the Contractor's quality assurance program procedures as necessary to ensure protection of products upon delivery. Contractor shall be solely responsible for all products upon delivery to Work site and in off-site storage.
 - 1. Contractor shall schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Contractor shall coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Contractor shall inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
- B. Manufacturer's Requirements: Contractor shall determine and comply with manufacturer's instructions and recommendations for product handling.
- C. Packaging: Contractor shall deliver products to Work site in manufacturer's original containers, with labels intact and legible.
 - 1. Products delivered to Work site shall be in undamaged condition, in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 2. Contractor shall maintain packaged materials with seals unbroken and labels intact until time of use.

- 3. Products will be subject to rejection if they do not bear required identification or are unsuitably packaged.
- D. Delivery:
 - 1. Contractor shall address and deliver products to Project site. Do not deliver products to University campus shipping and delivery department. Address deliveries to Contractor and Project name. Do not address products "care of" University.
 - 2. University will not be responsible for misaddressed and misdelivered products, including claims for damage and delay.
- E. Damaged Products: In event of damage, Contractor shall promptly make replacements and repairs to packaging and contents, as acceptable to University's Representative, at no change in Contract Sum and Contract Time.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Storage and protection requirements to ensure that products intended for use in the Work will not be damaged and will not deteriorate from time of delivery to time of incorporation into the Work.

1.3 RELATED SECTIONS

- A. Section 01520 Construction Facilities: Requirements for storage sheds.
- B. Section 01525 Construction Staging Areas: Locations for vehicular access and staging of products during Work.
- C. Section 01560 Temporary Barriers and Enclosures: Requirements for temporary construction barriers, enclosures and passageways, applicable to protection of construction.
- D. Section 01610 Basic Product Requirements: Qualitative requirements for products.
- E. Section 01650 Product Delivery Requirements: Requirements for packaging and delivery of products.

1.4 QUALITY ASSURANCE

- A. Contractor's Quality Assurance: Contractor shall include within the Contractor's quality assurance program procedures as necessary to ensure protection of products after delivery to Work site. Contractor shall be solely responsible for all products stored on site and in off-site storage.
 - 1. Contractor shall protect stored products from damage.
 - 2. Contractor shall store products to allow for inspection and measurement of quantity or counting of units.
 - 3. Contractor shall store materials in a manner that will not endanger Project structure.
 - 4. Contractor shall store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
- B. Manufacturer's Handling Requirements: Contractor shall determine and comply with product manufacturer's written instructions for handling products.
- C. Manufacturer's Storage Requirements: Contractor shall determine and comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection

requirements for storage.

- D. Storage: Contractor shall provide secure locations and enclosures at Project site for storage of materials and equipment. Contractor shall coordinate location with Contractor storage and staging areas. Refer to Section 01520 - Construction Facilities and Section 01525 - Construction Staging Areas.
 - 1. Contractor shall maintain packaged materials with seals unbroken and labels intact until time of use.
 - 2. Products will be subject to rejection if they do bear required identification or are unsuitably packaged.
- E. Damaged Products: In event of damage, Contractor shall promptly make replacements and repairs to packaging and contents, as acceptable to University's Representative, at no change in Contract Sum and Contract Time.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

PREPARATION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Requirements for preparation prior to installing, applying and placing products to determine acceptable conditions for the Work.
- B. Layout of the Work and other engineering services necessary to accomplish the Work.

1.3 RELATED SECTIONS

- A. Section 01310 Coordination: Requirements for proper sequencing and interfacing of the Work.
- B. Section 01312 Project Meetings: General requirements for pre-installation conferences.
- C. Section 01321 Construction Progress Schedules: Requirements for scheduling and sequencing of the Work.
- D. Section 01732 Cutting and Patching: Work performed to provide access for performing the Work.
- E. Section 01770 Contract Closeout Procedures: Project record documents, including layout data.
- F. Section 01781 Survey and Layout Data: Requirements for survey and layout data submittals.

FOLLOWING ARE EXAMPLES ONLY. LIST RELATED SECTIONS APPLICABLE TO PROJECT.

- G. Section 02222 Selective Demolition: Removal of existing construction in preparation of performance of specified Work.
- H. Section 02225 Removals and Relocations: Removal of products in preparation for the Work.
- I. Individual Division 2 through 17 Product Specification Sections: Specific requirements for preparation prior to performance of the Work.

1.4 LAYOUT OF WORK

- A. Surveyor: Contractor shall select and pay for services of a land surveyor, registered in the State of California, for proper performance of the Work.
 - 1. Services of surveyor shall be suitable for layout and verification of location of buildings and site elements.
 - 2. For the Project record, Contractor shall submit the name, address and telephone number of land surveyor before starting survey Work.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Manufacturer's Requirements: Contractor shall determine product manufacturer's requirements and recommendations prior to commencing Work.
- B. Preparations: Contractor shall perform preparation actions according to manufacturer's instructions and recommendations and according to specified procedures.
 - 1. Contractor shall perform surface preparation as necessary to create suitable substrates for application, installation and placement of products.
 - 2. Contractor shall notify University's Representative in writing of unsuitable conditions preventing proper performance of the Work.
- C. Existing Utility Information: Contractor shall furnish information to serving utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Contractor shall coordinate with University's Representative and with authorities having jurisdiction.
- D. Existing Utility Interruptions: Contractor shall not interrupt utilities serving facilities occupied by University or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
 - 1. Contractor shall notify University's Representative not less than two working days in advance of proposed utility interruptions.
 - 2. Contractor shall not proceed with utility interruptions without written permission from University's Representative.
- E. Field Measurements: Contractor shall take field measurements as required to fit the Work properly. Contractor shall recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, Contractor shall verify dimensions of other construction by field measurements before fabrication. Contractor shall coordinate fabrication schedule with construction progress to avoid delaying the Work.
- F. Space Requirements: Contractor shall verify space requirements and dimensions of items shown diagrammatically on Drawings.
- G. Review of Contract Documents and Field Conditions: Immediately upon discovery of the need for clarification of the Contract Documents, Contractor shall submit a Request for Interpretation (RFI) to Architect. Contractor shall include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Contractor shall submit requests in accordance with requirements specified in Section 01340 - Requests for Interpretation (RFI), using form as directed by University's Representative.
- H. Verification of Construction Layout: Before proceeding to lay out the Work, Contractor shall verify

layout information shown on Drawings, in relation to the property survey and existing benchmarks, and locate survey reference points. If discrepancies are discovered, Contractor shall promptly notify University's Representative, Architect and Project Inspector.

3.2 FIELD ENGINEERING

- A. Examination: Contractor shall verify locations of survey control and reference points prior to starting Work. If discrepancies are discovered, Contractor shall promptly notify University's Representative, Architect and Project Inspector.
- B. Survey Control and Reference Points: Contractor shall locate and protect survey control and reference points. Control datum for survey shall be as indicated on Civil Drawings. Notwithstanding the data on Civil Drawings, Contractor shall use NAD 83 State Plane Coordinate System for survey control and reference points.
 - Business and Professions Code section 8771 provides for the preservation of Survey Monuments in construction projects. This legislation mandates that, prior to construction, monuments shall be referenced in the field and "Corner Records" shall be prepared for filing in the Office of the County Surveyor. Contractor shall ensure that these shall be performed prior to Contract Completion of the Work.
 - 2. Contractor shall comply with requirements of authorities having jurisdiction for survey monument preservation on capital improvement projects where monument points are present.
 - 3. Contractor shall be responsible for preparing and submitting proper documentation to the Office of the County Surveyor in compliance with Business and Professions Code section 8771.
 - 4. Contract Completion and release of retainage shall be contingent upon obtaining documentation from Contractor's project surveyor or engineer that monuments have been set or restored and that Corner Records have been filed with and to the satisfaction of the County Surveyor.
 - 5. All costs and actions necessary for compliance with Business and Professions Code section 8771 shall be included in the Contract Sum and Contract Time.

3.3 SURVEYING AND FIELD ENGINEERING SERVICES

- A. Surveying and Field Engineering Services: Contractor shall provide surveying and field engineering services as necessary for performance of the Work. Refer to Section 01781 Survey and Layout Data.
 - 1. Contractor shall be responsible for the accuracy and adequacy of surveying and field engineering services.
 - 2. Contractor shall utilize recognized engineering practices.
 - 3. Contractor shall check the location, level and plumb, of every major element as the Work progresses.
 - 4. Contractor shall preserve construction survey stakes and marks for the duration of their usefulness.
 - 5. If construction survey stakes are lost or disturbed, and require replacement, Contractor shall perform replacement at no change in Contract Sum and Contract Time.

- 6. Contractor shall excavate all holes necessary for line and grade stakes.
- B. Surveying for Layout and Control of the Work: Contractor shall establish elevations, lines and levels for all Work under the Contract. Contractor shall locate and lay out by instrumentation and similar appropriate means:
 - 1. Site improvements, including pavements, curbs, headers, sewers, storm drains, structures, and paving. Note on Project Record Drawings utility locations, slopes and invert elevations.
 - 2. Stakes for cutting, filling, grading and topsoil placement, to establish finished grade or flow line indicated on Contract Drawings.
 - a. Contractor shall preserve construction survey stakes and marks for the duration of their usefulness.
 - b. If construction survey stakes are lost or disturbed, and require replacement, Contractor shall perform replacement at no change in Contract Sum and Contract Time.
 - c. Contractor shall excavate all holes necessary for line and grade stakes.
 - 3. Grid or axis for structures, building foundation, column locations and ground floor elevations.
 - 4. Contractor shall establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 - 5. Contractor shall establish dimensions within tolerances indicated. Contractor shall not scale Drawings to obtain required dimensions.
 - 6. Contractor shall inform installers of lines and levels to which they must comply.
 - 7. When deviations from required lines and levels exceed allowable tolerances, Contractor shall notify University's Representative, Architect and Project Inspector.
 - 8. Contractor shall close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Monuments: Contractor shall establish a minimum of two permanent monuments on site, referenced to established control points. Contractor shall record locations, with horizontal and vertical data, on Project Record Drawings.
 - 1. In accordance with Business and Professions Code section 8772, any monument set by a licensed land surveyor or registered civil engineer to mark or reference a point on a property or land line shall be permanently and visibly marked or tagged with the certificate number of the surveyor or civil engineer setting it, each number preceded by the letters "L.S." or "R.C.E." respectively, as the case may be, or, if the monument is set by a public agency, it shall be marked with the name of the agency and the political subdivision it serves.
 - 2. Nothing in this Section shall prevent the inclusion of other information on the tag which will assist in the tracing or location of survey records which relate to the tagged monument.
 - 3. Contractor shall ensure that centerline ties filed with the County Surveyor will be checked for compliance with this law.
- D. Site Grading Verification: Upon completion of grading, Contractor shall survey graded areas and establish that elevations are correct and within acceptable tolerances for paving and finish grading.

E. Verification of Work: Contractor shall periodically verify layout and completed conditions of the Work by same means.

EXECUTION REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. General requirements for installing, applying and placing products.
- B. General requirements for correction of defective Work.

1.3 RELATED SECTIONS

- A. Section 01312 Project Meetings: Pre-installation and coordination conferences where procedures for installing, applying and placing products are reviewed prior to performance of the Work.
- B. Individual Division 2 through 17 Product Specification Sections: Specific requirements for installing, applying and placing products.

1.4 EXECUTION

- A. Manufacturer's Requirements: Contractor shall determine product manufacturer's requirements and recommendations prior to commencing Work.
- B. Execution: Contractor shall perform installation, application and placement actions according to manufacturer's instructions and recommendations and according to specified procedures.
 - 1. Contractor shall perform surface preparation as necessary to create suitable substrates for application, installation and placement of products.
 - 2. Contractor shall notify University's Representative in writing of unsuitable conditions preventing proper performance of the Work.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.1 INSTALLATION, APPLICATION AND PLACEMENT OF PRODUCTS

- A. Manufacturer's Instructions: Contractor shall comply with manufacturer's written instructions and recommendations for installing, applying, placing and finishing products.
- B. Installation, Application and Placement, General: Contractor shall locate the Work and components of the Work accurately, in correct alignment, orientation and elevation, as indicated.
 - 1. Contractor shall make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, Contractor shall install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Contractor shall conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

- 4. Contractor shall maintain minimum headroom clearance of 8 feet (2.4 m) in spaces without a suspended ceiling, unless otherwise directed.
- 5. Contractor shall install products at the time and under conditions that will ensure the best possible results. Contractor shall maintain conditions required for product performance until acceptance of the Work.
- Contractor shall conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- C. Tools and Equipment: Contractor shall not use tools or equipment that produce harmful noise levels.
- D. Anchors and Fasteners: Contractor shall provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, Contractor shall mount components at heights directed by Architect.
 - 2. Contractor shall allow for building movement, including thermal expansion and contraction.
- E. Joints: Contractor shall make joints of uniform width. Where joint locations in exposed work are not indicated, Contractor shall arrange joints for the best visual effect. Contractor shall fit exposed connections together to form hairline joints.
- F. Hazardous Materials: Contractor shall use products, cleaners, and installation materials that are not considered hazardous.
- G. Cleaning: Contractor shall comply with requirements specified in Section 01740 Cleaning Requirements. See individual product Specifications Sections for specific cleaning procedures to be performed.
- H. Protection: Contractor shall provide barriers, covers and other protective devices as recommended by manufacturer and complying with general requirements specified in Section 01560 Temporary Barriers and Enclosures.
 - 1. Contractor shall comply with manufacturer's written instructions for temperature and relative humidity.
 - 2. See individual product Specifications Sections for specific protective measures to be provided.
- I. Limiting Exposures: Contractor shall supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.2 OWNER-INSTALLED PRODUCTS

- A. Site Access: Contractor shall provide access to Project site for University's construction forces and those performing work for University under separate contracts. Contractor shall coordinate with requirements specified in Section 01550 Vehicular Access and Parking.
- B. Coordination: Contractor shall coordinate construction and operations of the Work with work performed by University by separate contract or with University's construction forces.
 - Construction schedule: Contractor shall inform University's Representative of Contractor's preferred construction schedule for University-installed work. Contractor shall adjust construction schedule based on a mutually agreeable timetable. Contractor shall notify University's Representative if changes to schedule are required due to differences in actual construction progress.

2. Pre-installation and coordination conferences: Contractor shall include University's construction forces at pre-installation and coordination conferences covering portions of the Work that are to receive University-installed work. If portions of the Work depend on University-installed products, Contractor shall attend pre-installation conferences conducted by University's construction forces.

3.3 CORRECTION OF THE WORK

- A. Correction of the Work, General: Contractor shall repair or remove and replace defective construction. Contractor shall restore damaged substrates and finishes to match original and new surrounding construction.
 - 1. Contractor shall comply with requirements in Section 01732 Cutting and Patching Procedures.
 - 2. Repairing shall include replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
 - 3. Contractor shall remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
 - 4. Contractor shall repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
 - 5. Contractor shall remove and replace chipped, scratched, and broken glass.
- B. Restoration of Existing Conditions: Contractor shall restore permanent facilities used during construction to their original condition or to match new construction.

CUTTING AND PATCHING REQUIREMENTS

PART 1 - GENERAL

RELATED DOCUMENTS 1.1

Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, Α. including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- Requirements and procedural requirements for cutting and patching, including: Α.
 - Cutting and patching not required to be performed as part of the Work specified in other 1. Sections.
 - 2. Cutting and patching existing construction altered or disturbed to accommodate new construction.
 - Cutting and patching existing construction damaged or defaced during new construction as 3. required to restore to existing or better condition at the time of award of Contract.
 - Cutting and patching required to: 4.
 - a. Install or correct non-coordinated Work.
 - b. Remove and replace defective and non-conforming Work.
 - Remove samples of installed Work for testing. C.
- Refer to other Sections and drawings for specific requirements of the extent and limitations В. applicable to cutting and patching, demolishing, or altering existing construction of individual parts of the Work.
 - 1. Requirements of this Section also apply to mechanical and electrical installations. (Refer to Division-15 and Division-16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations).

1.3 **RELATED SECTIONS**

- A. Section 01100 Summary of the Work: Work by University's construction forces or by others under separate contract with University.
- B. Section 01560 Temporary Barriers and Enclosures: Dust-control barriers at cutting and patching locations.
- C. Section 01740 Cleaning Requirements: Cleaning after cutting and patching Work.

FOLLOWING IS EXAMPLE ONLY. LIST RELATED SECTIONS APPLICABLE TO PROJECT.

- D. Section 02222 Selective Demolition: Cutting and removal of existing construction.
- E. Individual Division 2 through 17 Product Specification Sections:
 - 1. Cutting and patching incidental to Work specified in the Section.
 - Coordination with Work specified in other Sections for openings required to accommodate 2. Work specified in those other Sections.

1.4 SUBMITTALS

EDIT REFERENCE BELOW TO SUIT PROJECT. VERIFY APPLICABLE SECTION

NUMBER AND TITLE FOR DEMOLITION WORK.

- A. Written Requests for Cutting and Alteration: Coordinate with requirements specified in [Section 02222 Selective Demolition] [Section [_No._] [____]].
 - 1. Contractor shall submit written request in advance of cutting or alteration which affects:
 - a. Structural integrity of any element of new or existing construction.
 - b. Integrity of weather-exposed or moisture-resistant elements.
 - c. Efficiency, maintenance, or safety of operational elements.
 - d. Visual qualities of elements exposed to view in the completed construction.
 - e. Work by University's construction forces or by others under separate contract with University.
 - f. Existing construction not otherwise indicated to be revised by Work under the Contract.
 - 2. Contractor shall include in requests for cutting and alteration:
 - a. Identification of Project.
 - b. Location and description of affected Work. Include shop drawings as necessary to identify locations and communicate descriptions.
 - c. Explanation of necessity for cutting and patching.
 - d. Description of proposed Work and products to be used.
 - e. Alternatives to cutting and patching.
 - f. Effect on existing construction.
 - g. Effect on work by University's construction forces or by separate contractors performing work for University.
 - 3. Contractor shall include written evidence that those performing work under separate contract for University have been notified and acknowledge that cutting and patching work will be occurring. Contractor shall include written permission for intended cutting and patching, included scheduled times.
 - 4. Contractor shall indicate date and time cutting and patching Work will be performed, including duration.
 - 5. Contractor shall describe the extent of cutting and patching required and how it is to be performed.
 - 6. Contractor shall describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 7. Contractor shall list products to be used and firms or entities that will perform work.
 - 8. Contractor shall list utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Contractor shall indicate how long service will be disrupted.
 - 9. Where cutting and patching involves addition of reinforcement to structural elements, Contractor shall submit details to show how reinforcement is integrated with the original structure.
 - 10. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.
 - 11. Contractor shall minimize effects on University operations and on concurrent operations

construction by other contractors.

1.5 QUALITY ASSURANCE

- A. Requirements for Structural Work: Contractor shall not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
 - 1. Contractor shall obtain approval from the Architect of the cutting and patching proposal before cutting and patching the following structural elements:
 - (a) Bearing and retaining walls
 - (b) Structural concrete
 - (c) Structural steel
 - (d) Lintels
 - (e) Timber and primary wood framing
 - (f) Structural decking
 - (g) Stair systems
 - (h) Miscellaneous structural metals
 - (i) Equipment supports
 - (j) Piping, ductwork, vessels and equipment
- B. Operational and Safety Limitations: Contractor shall not cut and patch operating elements or safety-related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
 - 1. Contractor shall obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety-related systems:
 - (a) Primary operational systems and equipment
 - (b) Air or smoke barriers
 - (c) Water, moisture, or vapor barriers
 - (d) Membranes and flashings
 - (e) Fire protection systems
 - (f) Noise and vibration control elements and systems
 - (g) Control systems
 - (h) Communication systems
 - (i) Electrical wiring systems
- C. Visual Requirements: Contractor shall not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Contractor shall remove and replace work cut and patched in a visually unsatisfactory manner.
- D. If possible Contractor shall retain the original installer or fabricator throughout construction phases to cut and patch the following categories of exposed work, or if it is not possible to engage the original installer or fabricator, Contractor shall engage another recognized experienced and specialized firm:
 - (1) Concrete finishes
 - (2) Masonry
 - (3) Stucco and ornamental plaster
 - (4) Acoustical ceilings
 - (5) Painting
 - (6) Wall covering
 - (7) HVAC enclosures, cabinets or covers

PART 2 - PRODUCTS

2.1 PATCHING MATERIALS

- A. Patching Materials, General: As required for original installation and to match surrounding construction.
 - 1. Contractor shall provide same products or types of construction as that in existing structure, as needed to patch, extend or match existing.
 - 2. Generally the Contract Documents will not define products or standards of workmanship present in existing construction; Contractor shall determine products by inspection and necessary testing, and determine quality of workmanship by using existing as a sample for comparison.
 - 3. The presence of a product, finish, or type of construction requires that patching, extending or matching shall be performed as necessary to make work complete and consistent with identical standards of quality.
- B. Patching at Paving: At portland cement concrete paving, Contractor shall use concrete mix with maximum 3/8-inch aggregate and minimum 3000 psi 28-day compressive strength. Contractor shall provide dowels to existing paving and reinforce new paving with minimum No. 3 reinforcing steel bars at 16-inches on center each way. Welded wire fabric reinforcement will not be acceptable.
- C. Patching of Lawns and Grasses: Contractor shall restore areas trenched, disturbed or damaged. Contractor shall provide sod or seeded planting mix, to match existing lawn or grass area.
- D. Patching of Building Finish Materials: Contractor shall match existing products and finishes. Contractor shall confirm colors, patterns and textures with Architect. Contractor shall custom cut new materials to fit and to match joint patterns with existing materials.
 - 1. Ceramic tile and acoustical panels: Contractor shall custom cut new materials to size to match existing construction.
- E. Product Substitutions: For each proposed change in materials, Contractor shall submit request for substitution under provisions of Section 01610 Basic Product Requirements.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examination, General: Before cutting existing surfaces, Contractor shall examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Contractor shall take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered. Contractor shall inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
 - 1. Before proceeding, Contractor shall meet at the site with parties involved in cutting and patching, including asbestos abatement, mechanical and electrical trades. Contractor shall review areas of potential interference and conflict. Contractor shall coordinate procedures and resolve potential conflicts before proceeding.
 - 2. Beginning of cutting or patching shall be interpreted to mean that existing conditions were found by Contractor to be acceptable.
 - 3. After uncovering existing Work, Contractor shall inspect conditions affecting proper accomplishment of Work.

3.2 PREPARATION

A. Temporary Supports: Contractor shall provide supports to ensure structural integrity of the Work. Contractor shall provide devices and methods to protect other portions of Project from damage.
- B. Protection: Contractor shall protect existing construction during cutting and patching to prevent damage. Contractor shall provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Contractor shall avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Contractor shall take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.
- E. Weather Protection: Contractor shall provide protection from elements for areas which may be exposed by uncovering Work. Contractor shall maintain excavations free of water.

3.3 CUTTING AND PATCHING

- A. Cutting and Patching, General: Contractor shall execute cutting, fitting, and patching, excavation and fill, as necessary to complete the Work. Contractor shall employ skilled workers to perform cutting and patching. Contractor shall proceed with cutting and patching at the earliest feasible time and complete without delay. Contractor shall:
 - 1. Coordinate installation or application of products for integrated Work. Avoid having to cut and patch new substrates and finishes.
 - 2. Uncover completed Work as necessary to install or apply products out of sequence.
 - 3. Cut, remove and replace defective and non-conforming Work.
 - 4. Cut and patch as necessary to provide openings in the Work for penetration of plumbing, fire protection, HVAC and electrical Work.
 - 5. Where partitions are removed, patch floors, walls, and ceilings with finish materials to match existing.
 - a. Where removal of partitions results in adjacent spaces becoming one, re-work floors and ceilings to provide smooth and clean planes without breaks, steps, or bulkheads.
 - b. Where extreme change of plane of one inch or more occurs, request instructions from Architect as to method of making transition.
 - 6. Trim and refinish existing doors as necessary to clear new floor finishes.
 - 7. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.
- B. Cutting: Contractor shall:
 - 1. Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations. Provide appropriate surfaces to receive final finishing.
 - 2. Execute cutting and patching of weather-exposed, moisture-resistant elements and surfaces exposed to view by methods to preserve weather, moisture and visual integrity.
 - 3. Cut rigid materials using carbide tip saw blades, diamond grit abrasive saw blades, diamond core drills and hole saws, and similar cutters for smooth edges. Do not overcut corners.
 - a. Core drill holes through concrete and masonry.
 - b. Pneumatic tools will not be allowed without prior approval.
 - 4. Provide fire and smoke seals at new penetrations to maintain fire rating at all penetrations.
- C. Patching: Contractor shall patch with durable seams that are as invisible as possible. Contractor shall comply with specified tolerances. Contractor shall restore substrates and finishes with products to match existing construction and as specified in product Sections of the Specifications

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for new construction. Contractor shall:

- 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
- 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
- 3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.
 - a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken containing the patch, after the patched area has received primer and second coat.
- 4. Patch, repair or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance.
- 5. Finish surfaces flush and textured to match surrounding finishes.
- 6. Fit work neat and tight allowing for expansion and contraction.
- 7. Butt new finished to existing exposed structure, pipes, ducts, conduit, and other penetrations through surfaces.
- D. Finishing: Contractor shall refinish surfaces to match adjacent and similar finishes as used for the Project.
 - 1. For continuous surfaces, Contractor shall refinish to nearest intersection or natural break.
 - 2. For an assembly, Contractor shall refinish entire unit.
- E. Penetrations at Fire-Rated Construction: At penetrations of fire rated walls, partitions, ceiling, or floor construction, Contractor shall completely seal voids with firestopping and smoke seal material in compliance with an applicable UL-listed assembly, to full thickness of the penetrated element. Refer to [Section 07840 - Firestopping and Smoke Seals] [Section [_No._] - [_TITLE_]].
- F. Restoration and Finishing: Contractor shall finish surfaces to match adjacent and similar finishes as used for the Project.
 - 1. Contractor shall restore Work with new products as specified in individual product Specifications Sections in Divisions 7 and 9.
 - 2. Contractor shall patch and replace any portion of an existing finished surface which is found to be damaged, lifted, discolored, or shows other imperfections, with matching material. Contractor shall:
 - a. Provide adequate support of substrate prior to patching the finish.
 - b. Refinish patched portions of painted or coated surfaces in a manner to produce uniform color and texture over the entire surface.
 - c. When existing surface finish cannot be matched, refinish entire surface to nearest intersections.
- G. Transition from Existing to New Construction:
 - 1. When new work abuts or finishes flush with existing work, Contractor shall make a smooth and clean transition. Contractor shall patched work shall match existing adjacent work in texture and appearance so that the patch or transition is invisible at a distance of five feet.
 - 2. When finished surfaces are cut in such a way that a smooth and clean transition with the new work is not possible, Contractor shall notify Architect. Contractor shall terminate existing surface in a neat manner along a straight line at a natural line of division, and provide trim appropriate to finished surface, or as otherwise directed by Architect.
- H. Plaster Installation: Contractor shall comply with manufacturer's instructions and install thickness and coats as indicated.

3.4 CLEANING

A. Cleaning: Contractor shall thoroughly clean areas and spaces where cutting and patching is performed or used as access. Contractor shall remove completely paint, mortar, oils, putty and items of similar nature. Contractor shall thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Contractor shall restore damaged pipe covering to its original condition.

INDOOR AIR QUALITY

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and other Division 1 Specification Sections that apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Prevent the deposition of dust and other particulates in HVAC ducts and equipment.
 - a. Cleaning of ductwork is not contemplated under this Contract.
 - b. Contractor shall bear the cost of cleaning required due to failure to protect ducts and equipment form construction dust.
 - 2. Airborne Contaminants: Procedures and products have been specified to minimize indoor air pollutants.
 - a. Furnish products meeting the specifications.
 - b. Avoid construction practices that could result in contamination of installed products leading to indoor air pollution.
- B. Related Sections include the following;
 - 1. Division 1 Section "LEED Requirements"
 - 2. Division 1 Section "Quality Requirements" for Testing Laboratory services.

1.3 **REFERENCES**

- A. ASHRAE 52.2 1999 Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size. <u>www.ashrae.org</u>
- B. SMACNA (OCC) IAQ Guideline for Occupied Buildings Under Construction; 1995. www.smacna.org
- C. U.S. EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air-NTS, (800) 553-6847, order number PB90200288.
- D. LEED-NC version 2.2 Reference Guide U.S. Green Building Council, 2005. www.usgbc.org

1.4 DEFINITIONS

- A. Absorptive Materials: Gypsum board, acoustical ceiling tile and panels, carpet and carpet tile, fabrics, fibrous insulation, and other similar products.
- B. Contaminants: Gases, vapors, regulated pollutants, airborne mold and mildew, and the like, as specified.
- C. Particulates: Dust, dirt, and other airborne solid matter.

D. Wet Work: Concrete, plaster, coatings, and other products that emit water vapor or volatile organic compounds during installation, drying, or curing.

1.5 SUBMITTALS

- A. See Division 1 Section "Submittal Procedures", for submittal procedures.
- B. Indoor Air Quality Management Plan: Describe in detail measures to be taken to promote adequate indoor air quality upon completion; use SMACNA IAQ Guidelines for Occupied Buildings Under Construction as a guide.
 - 1. Submit not less than 60 days before enclosure of building.
 - 2. Identify potential sources of odor and dust
 - 3. Identify construction activities likely to produce odor or dust.
 - 4. Identify areas of project potentially affected, especially occupied areas.
 - 5. Evaluate potential problems by severity and describe methods of control.
 - 6. Describe construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.
 - 7. Describe cleaning and dust control procedures.
- C. Interior Finishes Installation Schedule: Identify each interior finish that either generates odors, moisture, or vapors or is susceptible to absorption of odors and vapors, and indicate air handling zone, sequence of application, and curing times.
- D. Duct and Terminal Unit Inspection Report
- E. Air Contaminant Test Plan: Identify:
 - 1. Testing agency qualifications.
 - 2. Locations and scheduling of air sampling.
 - 3. Test procedures, in detail.
 - 4. Test instruments and apparatus.
 - 5. Sampling methods
- F. Air Contaminant Test Reports: Show:
 - 1. Location where each sample was taken, and time.
 - 2. Test values for each air sample; average the values of each set of 3.
 - 3. HVAC operating conditions.
 - 4. Certification of test equipment calibration.
 - 5. Other conditions or discrepancies that might have influenced results.

1.6 QUALITY ASSURANCE

A. Testing and Inspection Agency Qualifications: Independent testing agency having minimum of 5 years experience in performing the types of testing specified.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Low VOC Materials: See Division 01 Section "LEED Requirements" for specific VOC limits.

PART 3 – EXECUTION

3.1 CONSTRUCTION PROCEDURES

- A. Prevent the absorption of moisture and humidity by absorptive materials by:
 - 1. Sequencing the delivery of such materials so that they are not present in the building until wet work is completed and dry.
 - 2. Delivery and storage of such materials in fully sealed moisture-impermeable packaging.
 - 3. Provide sufficient ventilation for drying within reasonable time frame.
- B. Begin construction ventilation when building is substantially enclosed.
- C. HVAC equipment and supply air ductwork may be used for ventilation during construction:
 - 1. Operate HVAC system on 100 percent outside air, with 1.5 air changes per hour, minimum.
 - 2. Ensure that air filters are correctly installed prior to starting use; replace filters when they lose efficiency.
 - 3. Do not use return air ductwork for ventilation unless absolutely necessary.
 - 4. Where return air ducts must be used for ventilation, install auxiliary filters with a Minimum Efficiency Reporting Value (MERV) of 8 at all return inlets, as determined by ASHRAE 52.2 1999, sealed to ducts; inspect and replace filters when they lose efficiency and immediately prior to occupancy.
- D. Do not store construction materials or waste in mechanical or electoral rooms.
- E. Prior to use of return air ductwork without intake filters clean up and remove dust and debris generated by construction activities.
 - 1. Inspect duct intakes, return air grilles, and terminal units for dust.
 - 2. Clean plenum spaces, including top sides of lay-in ceilings, outsides of ducts, tops of pipes and conduit.
 - 3. Clean tops of doors and frames.
 - 4. Clean mechanical and electrical rooms, including tops of pipes, ducts, and conduit, equipment, and supports.
 - 5. Clean return plenums of air handling units.
 - 6. Remove intake filters last, after cleaning is complete.
- F. Do not perform dusty or dirty work after starting use of return air ducts without intake filters.
- G. Use other relevant recommendations of SMACNA IAQ Guideline for Occupied Buildings Under Construction for avoiding unnecessary contamination due to construction procedures.

3.2 BUILDING FLUSH-OUT

- A. Contractor's Option: Either full continuous flush-out OR satisfactory air contaminant testing is required, not both.
- B. Perform building flush-out before occupancy.
- C. Do not start flush-out until:
 - 1. All construction is complete.
 - 2. HVAC systems have been tested, adjusted, and balanced for proper operation.
 - 3. Inspection of inside of return air ducts and terminal units confirms that cleaning is not necessary.
 - 4. New HVAC filtration media have been installed.
- D. Building Flush-Out: Operate all ventilation systems to supply a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60 percent.

- 1. Obtain Owner's concurrence that construction is complete enough before beginning flush-out.
- 2. If occupancy is desired prior to completion of flush-out, space may be occupied following delivery of 3,500 cu.ft. of outdoor air per sq.ft. of floor area. Once space is occupied, it shall be ventilated at a minimum rate of 0.30 cfm/sq.ft. of outside air or the design minimum outside air rate determined in EQp1, whichever is greater, until a total of 14,000 cu.ft. per sq.ft. of outside air has been delivered to the space. During each day of the flush-out period, ventilation shall begin a minimum of three hours prior to occupancy and continue during occupancy.
- E. Intall new HVAC filtration media with a Minimum Efficiency Reporting Value (MERV) of 13 or better after completion of flush-out and before occupancy or further testing.

3.3 AIR CONTAMINANT TESTING

- A. Contractor's Option: Either full continuous flush-out OR satisfactory air contaminant testing is required, not both.
- B. Perform air contaminant testing before occupancy, using testing protocols consistent with the U.S. EPA Compendium of Methods for the Determination of Air Pollutants in Indoor Air and as additionally detailed in the LEED-NC version 2.2 Reference Guide.
- C. Do not start air contaminant testing until:
 - 1. All finishes are installed and construction is complete.
 - 2. HVAC systems have been tested, adjusted, and balanced for proper operation.
 - 3. New HVAC filtration media have been installed.
- D. Indoor Air Samples: collect from spaces representative of occupied areas:
 - 1. Collect samples while operable windows and exterior doors are closed, HVAC system is running normally, and the building is unoccupied.
 - 2. Collect samples from spaces in each air handler zone.
 - 3. Collect samples from height from 48 inches to 72 inches above floor.
 - 4. Collect samples from same locations over a minimum 4-hour period, during normal business hours; average the results of each set of 3 samples.
 - 5. Exception: Areas with normal very high outside air ventilation rates, such as laboratories, do not need to be tested.
 - 6. When retesting the same building areas, take samples from at least the same location as in the first test.
- E. Outdoor Air Samples: Collect samples at outside air intake of each air handler at the same time as indoor samples are taken.
- F. Analyze air samples and submit report.
- G. Air Contaminant maximum Concentration Limits:
 - 1. Carbon Monoxide: 9 parts per million, not more than 2 ppm above outside air.
 - 2. Formaldehyde: 50 parts per billion
 - 3. Total Volatile Organic Compounds (TVOC): 500 micrograms per cubic meter.
 - 4. Particulates (PM10): 50 micrograms per cubic meter.
 - 5. 4-Phenylcyclohexene (4-PCH): 6.5 micrograms per cubic meter; only required if carpets and fabrics with styrene butadiene rubber (SBR) latex backing material are installed as part of the base building systems.

STARTING AND ADJUSTING PROCEDURES

THIS SECTION REQUIRES DEVELOPMENT, RELATED TO COMMISSIONING ACTIVITIES, REQUIREMENTS SPECIFIED IN DIVISIONS 13, 14, 15 AND 16, AND SECTION 01812 - PERFORMANCE AND OPERATIONAL TESTING (IF USED). COMPLY WITH DIRECTIONS FROM UNIVERSITY'S REPRESENTATIVE.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Starting systems.
- B. Demonstration and instructions.
- C. Testing, adjusting, and balancing.

1.3 RELATED SECTIONS

- A. Section 01450 Quality Control: Manufacturers field reports.
- B. Section 01783 Operation and Maintenance Data: System operation and maintenance data and extra materials.

1.4 STARTING SYSTEMS

- A. Contractor shall coordinate schedule for start-up of various equipment and systems.
- B. Contractor shall notify University's Representative, Architect and Project Inspector in writing at least seven calendar days prior to start-up of each item.
- C. Contractor shall verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Contractor shall verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Contractor shall verify that wiring and support components for equipment are complete and tested.
- F. Contractor shall execute start-up under supervision of applicable manufacturer's representative and/or Contractor's personnel in accordance with manufacturer's instructions.
- G. When specified in individual specification Sections, Contractor shall require manufacturer to provide

authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Contractor shall submit a written report in accordance with Section 01330 - Submittals Procedures that equipment or system has been properly installed and is functioning correctly.

1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Contractor shall demonstrate operation and maintenance of Products to University's personnel at least two weeks prior to date of Contract Completion review.
- B. Contractor shall demonstrate Project equipment and instruct in a classroom environment located at the University. The instruction shall be done by a qualified manufacturers' representative who is knowledgeable about the Project.
- C. For equipment or systems requiring seasonal operation, Contractor shall perform demonstration for other season within six months of completion or, if possible, artificially create a load in the building.
- D. Contractor shall utilize operation and maintenance manuals as basis for instruction. Contractor shall review contents of manual with University's personnel in detail to explain all aspects of operation and maintenance.
- E. Contractor shall demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled agreed time and at equipment/designated location.
- F. Contractor shall prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- G. The amount of time required for instruction on each item of equipment and system is that specified in individual sections. If no time is specified in individual sections, Contractor shall include in his/her bid sum a reasonable sum to perform instruction to the satisfaction of the University.

1.6 TESTING, ADJUSTING, AND BALANCING

- A. Testing Agency: Contractor shall appoint, employ, and pay for services of an independent firm to perform testing, adjusting and balancing.
- B. Reports will be submitted by the independent firm to University's Representative, Architect and Project Inspector indicating observations and results of tests and indicating compliance or non-compliance with the requirements of the Contract Documents.
- C. University reserves the right to hire its own independent testing and balancing company to check the work and the report submitted by the Contractor's testing and balancing firm.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

SURVEY AND LAYOUT DATA

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Administrative requirements for survey and layout data submittals.

1.3 RELATED SECTIONS

- A. Section 01450 Quality Control: Test and inspection reports.
- B. Section 01720 Preparation Requirements: Layout of the Work and other engineering services required for accomplishing the Work.
- C. Section 01770 Contract Closeout Procedures: Submittals for occupancy, Acceptance and Final Payment.

1.4 LAYOUT OF THE WORK

- A. Responsibility for Layout of the Work: Contractor shall be solely responsible for complete, timely and accurate layout of the Work including, but not necessarily limited to, horizontal and vertical control and dimensional coordination as necessary to construct the Work in accordance with the Contract Documents. Contractor shall:
 - 1. Employ a Land Surveyor or a Civil Engineer, registered in the State of California, to perform survey work.
 - 2. Employ a Professional Engineer, of the discipline required for the specific service on the Project, and licensed in the State of California where required in the specifications in Divisions 2 through 17.
- B. Survey Reference Points: Existing basic horizontal and vertical control points are shown on the Contract Documents, or location of control points will be furnished by the University Representative. Contractor shall use the University Record of Survey, provided by the University Representative, as the Basis of Bearings for survey horizontal control, and shall tie at least one Project site control point to a point on the University Record of Survey. Contractor shall:
 - 1. Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.
 - 2. Make no changes or relocations without prior written notice to Architect.
 - 3. Report to University Representative and Architect when any reference point is lost or destroyed.
 - 4. Require a surveyor to replace project control points which may be lost or destroyed. Establish replacements based on original survey control.

1.5 LAYOUT RECORD SUBMITTALS

- A. Land Surveyor: Contractor shall submit name, address and telephone number of land surveyor before starting survey work.
- B. Survey Logs: On request, Contractor shall submit copies of field documents verifying accuracy of survey Work.
- C. Submittal: Contractor shall submit a copy of registered site drawing and certificate signed by the land surveyor that the elevations and locations of the Work are in conformance with Contract Documents.

1.6 SURVEY RECORD DOCUMENTS

- A. Survey Record Documents: Contractor shall maintain a complete and accurate log of control and survey work as Work progresses. Upon completion of foundation walls and major site improvements, Contractor shall prepare a certified survey illustrating dimensions, locations, angles and elevations of new construction and site work. Contractor shall submit survey record documents as specified in Section 01770 Contract Closeout Procedures.
- B. Locations provided on the certified survey shall be coordinated with the control points tied to the University Record of Survey as per Section 1.4B.
- C. For each new Project utility or improvement which is not to be owned and maintained by the University, Contractor shall provide a legal description and plot, stamped and signed by a properly licensed surveyor or Civil Engineer, and which will use the University Record of Survey as the Basis of Bearings and will provide a Point of Commencement shown on said Record of Survey.

1.7 CONTRACTOR'S REVIEW

- A. Scope of Contractor's Review: Survey and layout data shall be reviewed by Contractor prior to submission for University's review or filing. Contractor shall sign each submittal copy certifying that:
 - 1. Field measurements have been determined and verified.
 - 2. Field construction criteria have been verified.
 - 3. Conformance with Drawings and Specifications requirements is confirmed.
- B. Contractor's Review Action: Contractor shall indicate clearly on survey and layout data whether the dimensions and coordinates are in compliance with Contract requirements. Contractor shall note clearly and sign each submittal certifying that reported data "Conforms" or "Does Not Conform".
- C. Changes and Deviations: Contractor shall identify all deviations from requirements of Drawings and Specifications. Changes in the Work shall not be authorized by submittals review actions. No review action, implicit or explicit, shall be interpreted to authorized changes in the Work. Changes shall only be authorized by separate written Change Order or Field Instruction, in accordance with the Contract General Conditions.

1.8 REVIEWS BY UNIVERSITY'S REPRESENTATIVE AND ARCHITECT

- A. Reviews by University's Representative and Architect, General: Reviews of survey and layout data by University's Representative and Architect, or other responsible design professional, shall be only for general conformance with the design concept and requirements based on the information presented. Neither Architect nor other responsible design professional shall verify submitted survey and layout data.
- B. Contract Requirements: Reviews by University's Representative, Architect or other responsible design professional shall not relieve the Contractor from compliance with requirements of the

Drawings and Specifications. Changes shall only be authorized by separate written Change Order or Field Instruction, in accordance with the Contract General Conditions.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

Not applicable to this Section.

PRODUCT WARRANTIES AND BONDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. General administrative and procedural requirements for preparation and submission of warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special Project warranties.
 - 1. Refer to the Contract General Conditions for terms of Contractor's special warranty of workmanship and materials.
 - 2. Certifications and other commitments and agreements for continuing services to University are specified elsewhere in the Contract Documents.

1.3 RELATED DOCUMENTS AND SECTIONS

- A. Section 01330 Submittals Procedures: General administrative requirements for submittals, applicable to warranties and bonds.
- B. Section 01770 Contract Closeout Procedures: General requirements for closeout of the Contract.
- C. Section 01783 Operation and Maintenance Data: Operating and maintenance data binders, to include copies of warranties and bonds.
- D. Section 01785A Special Warranty Form
- E. Product Specifications Sections in Divisions 2 through 17: Special Project warranty requirements for specific products or elements of the Work; commitments and agreements for continuing services to University.

1.4 **DEFINITIONS**

- A. Warranty: Assurance to University by Contractor, installer, supplier, manufacturer or other party responsible as warrantor, for the quantity, quality, performance and other representations of a product, system service of the Work, in whole or in part, for the duration of the specified period of time. The University's standard warranty form shall be used for all warranties under this Contract unless otherwise agreed to in writing by the University Representative.
- B. Guaranty: Assurance to University by Contractor or product manufacturer or other specified party, as guarantor, that the specified warranty will be fulfilled by the guarantor in the event of default by the warrantor.
- C. Standard Product Warranty: Preprinted, written warranty published by product manufacturer for particular products and specifically endorsed by the manufacturer to the University.

- D. Special Project Warranty: Written warranty required by or incorporated into Contract Documents, to extend time limits provided by standard warranty or to provide greater rights for University.
- E. Guaranty Period: As defined in the Contract General Conditions, guaranty period shall be synonymous with "warranty period", "correction period" and similar terms used in the Contract Specifications. Warranty period shall be one year from the date of Project Completion unless otherwise agreed to in writing by the University Representative.

1.5 WARRANTIES AND GUARANTIES

- A. Warranties and Guaranties, General: Contractor shall provide all warranties and guaranties with University named as beneficiary. For equipment and products, or components thereof, bearing a manufacturer's warranty or guaranty that extends for a period of time beyond the Contractor's warranty and guaranty, Contractor shall so state in the warranty or guaranty.
- B. Provisions for Special Warranties: Contractor shall refer to Contract General Conditions for terms of the Contractor's special warranty of workmanship and materials. Contractor to use the Special Warranty Form provided in Section 01785A.
- C. General Warranty and Guaranty Requirements: Warranty shall be an agreement to repair or replace, without cost and undue hardship to University, Work performed under the Contract which is found to be defective during the guaranty period (warranty or guaranty) period. Repairs and replacements due to improper maintenance or operation, or due to normal wear, usage and weathering are excluded from warranty requirements unless otherwise specified.
- D. Specific Warranty and Guaranty Requirements: Specific requirements are included in product Specifications Sections of Divisions 2 through 17, including content and limitations.
- E. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties and guaranties shall not relieve Contractor of responsibility for warranty and guaranty requirements for the Work that incorporates such products, nor shall they relieve suppliers, manufacturers, and installers required to countersign special warranties with Contractor.
- F. Related Damages and Losses: When correcting warranted Work that has been found defective, Contractor shall remove and replace other Work that has been damaged as a result of such defect or that must be removed and replaced to provide access for correction of warranted Work.
- G. Reinstatement of Warranty: When Work covered by a warranty has been found defective and has been corrected by replacement or rebuilding, Contractor shall reinstate the warranty by written endorsement.
- H. Replacement Cost: Upon determination that Work covered by a warranty has been found to be defective, Contractor shall replace or reconstruct the Work to a condition acceptable to University's Representative, complying with applicable requirements of the Contract Documents. Contractor shall be responsible for all costs for replacing or reconstructing defective Work regardless of whether University has benefited from use of the Work through a portion of its anticipated useful service life.
- I. University's Recourse: Written warranties made to University shall be in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under law, nor shall warranty periods be interpreted as limitations on time in which University can enforce such other duties, obligations, rights, or remedies.

- 1. Rejection of Warranties: University reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- J. Warranty as Condition of Acceptance: University reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment shall be required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.6 PREPARATION OF WARRANTY AND BOND SUBMITTALS

- A. Project Warranty and Guaranty Forms: Forms for Project warranties and guaranties are included in the Contract Documents. Contractor shall submit the warranty package submittal to the Architect, with a copy to the University Representative, for review and approval. Contractor shall:
 - 1. Refer to product Specifications Sections of Divisions 2 through 17 for specific content requirements, and particular requirements for submittal of special warranties.
 - 2. Prepare standard warranties and guaranties, excepting manufacturers' standard printed warranties and guaranties, on Contractor's, subcontractor's, material supplier's, or manufacturer's own letterhead, addressed to University as directed by University's Representative.
 - 3. Warranty and guaranty letters shall be signed by all responsible parties and by Contractor in every case, with modifications only as approved in advance by University's Representative to suit the conditions pertaining to the warranty or guaranty.
- B. Manufacturer's Guaranty Form: Manufacturer's guaranty form may be used instead of special Project form included in the Contract Documents, if agreed to in writing by the University's Representative. Manufacturer's guaranty form shall contain appropriate terms and identification, ready for execution by the required parties.
 - 1. If proposed terms and conditions restrict guaranty coverage or require actions by University beyond those specified, Contractor shall submit draft of guaranty to the Architect and the University's Representative for review and approval before performance of the Work.
 - 2. In other cases, Contractor shall submit draft of guaranty to the Architect and the University's Representative for approval prior to final execution of guaranty.
- C. Signatures: Signatures shall be by person authorized to sign warranties, guaranties and bonds on behalf of entity providing such warranty, guaranty or bond.
- D. Co-Signature: All installer's warranties and bonds shall be co-signed by Contractor. Manufacturer's guaranties will not require co-signature.

1.7 FORM OF WARRANTY AND BOND SUBMITTALS

- A. Form of Warranty and Bond Submittals: Prior to completion, Contractor shall collect and assemble all written warranties and guaranties into binders and deliver binders to the Architect, with a copy to the University Representative, for final review and acceptance. Contractor shall:
 - 1. Prior to submission, verify that documents are in proper form and contain all required information and are properly signed by Contractor, subcontractor, supplier and manufacturer, as applicable.
 - 2. Organize warranty and guaranty documents into an orderly sequence based on the Table of Contents of the Project Manual.
 - 3. Include Table of Contents for binder, neatly typed, following order and section numbers and

titles as used in the Project Manual.

- 4. Bind warranties, guaranties and bonds in heavy-duty, commercial quality, durable three-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, with clear front and spine to receive inserts, and sized to receive 8-1/2 inch by 11-inch paper.
- 5. Provide heavy paper dividers with celluloid or plastic covered tabs for each separate warranty. Mark tabs to identify products or installation, and section number and title.
- 6. Include on separate typed sheet, if information is not contained in warranty or guaranty form, a description of the product or installation, and the name, address, telephone number and responsible person for applicable installer, supplier and manufacturer.
- 7. Identify each binder on front and spine with typed or printed inserts with title "WARRANTIES AND BONDS", the Project title or name, and the name of the Contractor. If more than one volume of warranties, guaranties and bonds is produced, identify volume number on binder.
- 8. When operating and maintenance data manuals are required for warranted construction, include additional copies of each required warranty and guaranty in each required manual. Coordinate with requirements specified in Section 01783 Operation and Maintenance Data.

1.8 TIME OF WARRANTY AND BOND SUBMITTALS

- A. Submission of Preliminary Sample Copies: Unless otherwise specified, Contractor shall obtain submit sample preliminary copies of warranties, guaranties and bonds within ten days of completion of applicable item or Work with all product submittals for approval by the University..
- B. Submission of Preliminary Copies: Unless otherwise specified, Contractor shall obtain preliminary copies of warranties, guaranties and bonds within ten days of completion of applicable item or Work
- BC. Submission of Final Copies: Contractor shall submit fully executed copies of warranties, guaranties and bonds prior to Notice of Completion.
- CD. Date of Warranties and Bonds: Unless otherwise directed or specified, commencement date of warranty, guaranty and bond periods shall be the date established in the Notice of Completion.
 - 1. Warranties for Work accepted in advance of date stated in Notice of Completion: When a designated system, equipment, component parts or other portion of the Work is completed and occupied or put to beneficial use by University's Representative, by separate written agreement with Contractor, prior to completion date established in the Notice of Completion, Contractor shall submit properly executed warranties to University, as directed by University's Representative, within ten days of completion of that designated portion of the Work. Contractor shall list date of commencement of warranty, guaranty or bond period as the date established in the Notice of Completion.
- DE. Duration of Warranties and Guaranties: Unless otherwise specified or prescribed by law, warranty and guaranty periods shall be not less than the guaranty period required by the Contract General Conditions, but in no case less than one year from the date established for completion of the Project in the Notice of Completion. See product Specifications Sections in Divisions 2 through 17 of the Project Manual for extended warranty and guaranty beyond the minimum one-year duration.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

Not Applicable to this Section.

SECTION 01785A SPECIAL WARRANTY FORM

When required in Sections of the Specifications, Special Warranties shall be in the following form and written on Contractor's own letterhead:

"Warrant (portion of work warranted) Project: Address: Date: ____ We, the undersigned hereby warrant that the _____ which we have installed in the Project has been performed in accordance with the Contract Documents and that the work, as installed, will fulfill the requirements of the warranty included in this Specification. We agree to repair or replace any or all of our work, together with any other work which may be damaged or displaced by so doing, that may prove to be defective in its workmanship, materials, operation, or failure to conform to Contract provisions and requirements within a period of ____ year(s) from date of Notice of Completion of the above-named structure, without any expense whatever to the said Trustees, ordinary wear and tear and unusual abuse or neglect excepted. In the event of our failure to comply with the above-mentioned conditions within thirty (30) calendar days after being notified in writing by the Trustees, we collectively or separately do hereby authorize the Trustees to proceed to have said defects repaired and made good at our expense, including all collection cost and reasonable attorney fees, and we will honor and pay the costs and charges therefore upon demand." WARRANTY PERIOD: ______ STARTING: ______ TERMINATING _____ Name of General Contractor Name of Subcontractor Signature of General Contractor Signature of Subcontractor Address Address Phone Number Phone Number State License Number State License Number Name of Manufacturer Manufacturer Phone Number Signature of Manufacturer Product Warranty Tracking Number

END OF SPECIAL WARRANTY FORM

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

RELATED DOCUMENTS 1.1

Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, Α. including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

Requirements for Project Record Documents to be submitted for Contract closeout. Α.

1.3 **RELATED SECTIONS**

Section 01330 - Submittals Procedures: General requirements for submission for shop drawings, Α. product data, samples and quality control reports.

PROJECT RECORD DOCUMENTS 1.4

- Project Record Documents, General: Contractor shall not use Record Documents for construction Α. purposes. Contractor shall protect from deterioration and loss in a secure, fire-resistive location; provide access to Record Documents for the Trustees' and the Architect's reference during normal working hours.
- Record Drawings: Contractor shall record information continuously as Work progresses. В. Contractor shall not conceal Work permanently until all required information is recorded. Contractor shall:
 - 1. Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately.
 - Where Shop Drawings are used, record a cross-reference at the corresponding location on the 2. Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 - 3. Legibly and to scale, mark record sets with red erasable pencil. Use other colors to distinguish between variations in separate categories of the work.
 - Mark new information that is important to the University, but was not shown on Contract 4. Drawings or Shop Drawings. Record actual construction, including:
 - Measured depths of foundations and footings encountered, measured in relation to finish a. First Floor datum.
 - b. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent ground improvements.
 - c. Field changes of dimension and detail.
 - Details not on original Contract Drawings. Application of copies of details produced and d. provided by Architect during construction will be accepted.
 - Permanent Room names and Room numbers. e.
 - 5. Note related Change Order numbers where applicable.
 - Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, 6. and print suitable titles, dates and other identification on the cover of each set. 7.
 - Store Record Documents separate from documents used for construction.

- C. Record Specifications: Contractor shall record changes made by Addenda and Change Orders. In PART 2 PRODUCTS in each Section, Contractor shall legibly mark and record in red ink actual Products installed or used, including:
 - 1. Manufacturer's name and product model or catalog number.
 - 2. Product substitutions or alternates utilized.
- D. Submission:
 - 1. Contractor shall keep Project Record Documents current, as they will be reviewed for completeness by Architect, Inspector, and University's Representative as condition for certification of each Progress Payment Application.
 - 2. Prior to the date of the Notice of Completion, Contractor shall submit marked Record Documents to Architect for review, approval and further processing.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.1 CONTRACTOR AS-BUILT DOCUMENTATION PROCESS

- 1. Require monthly reviews by the superintendent, IOR and architect/engineer.
- 2. Require all to sign monthly avadavat (that states as-builts have been reviewed and are up to date) prior to acceptance of monthly pay request.
- 3. Provide language in Division 1 or SCG to fine contractor if monthly as-builts not complete. Similar language to schedule updates requirements. Consult CPDC General Counsel.
- 4. Require all changes including but not limited to, RFIs, ASIs, Field Instructions and field changes be added to the construction documents (conform set), including plans and specs. All revisions issued in 81/2 x 11 format to be reduced to 50% and adhered to the construction document with red ink identifying the location on the documents where the revision occurs.
- 5. Submit as-built documents to the architect for AutoCAD updates every three months. A copy shall be provided by the contractor monthly prior to approval of the-pay application.
- 6. For all underground work, the contractor shall provide base dimensions from the utility to a fixed structural part of the project, such as a foundation edge, street curb or other non-movable object.
- 7. All deferred submittals such as fire protection plans, shall be provided to the University in AutoCAD format as required in 3 below.
- 8. At project close out the contractor shall turn over the as-built documents to the University.

3.2 ARCHITECT AS-BUILT DOCUMENTATION PROCESS

- 1. The architect/engineer shall provide updated AutoCAD drawings, every three months, based on the as-built submittals provided by the contractor as described in 2 above.
- 2. Drawing sheets with three or more changes shall be re-issued to the contractor and University as revised construction documents and inserted into the construction documents (conform set).
- 3. At project close out the architect/engineer shall complete all as-built document revisions in AutoCAD and turn over the as-built documents to the University.
- 4. The architect/engineer shall return the original red-line as-builts, and provide 2 copies of electronic as-built documents on CD to the University in AutoCAD and PDF formats set to print on original size and orientation, and 2 full size sets of reproducible drawings.
- 5. Submit As-Built Specifications in PDF format. As-built specifications to be annotated showing original specification with strikethrough and changes in red or blue. Submit one electronic copy via Compact Disc and one hard copy in color. Electronic files to be by individual spec section and labeled with section number.

3.3 AUTOCAD STANDARDS

- 1. All deliverables shall conform to CSUSM CAD Standards.
- 2. No disclaimers are allowed on hard copy or auto cad drawings.
- 3. All deliverables shall be provided on Windows formatted CD-ROM
- 4. All files shall be directly copied to CD-ROM. Compression or archive utilities shall NOT be used.
- 5. All drawing files shall be saved in AutoCAD version 2004 or later. No other formats or versions are acceptable. Drawings prepared in Autodesk vertical applications (Architectural Desktop, Map 3D, etc.) which incorporate program-specific objects shall be submitted with appropriate object enabler files.
- 6. All projects which utilize 3-dimensional models shall include a copy of the final 3D model in its native file format. If a 3-dimensional model is included, the name of the software used to create it, the website address of the software publisher and the version of the software used shall be included in the information given to the University.

COMMISSIONING REQUIREMENTS

PART 1 - GENERAL

1.1 REQUIREMENTS AND RELATED SECTIONS

- A. The requirements of the General Conditions, Supplementary Conditions, and Division 1 General Requirements, apply to the work of this Section.
- B. Related Sections:
 - 1. Division 01 LEED Requirements

1.2 SYSTEMS TO BE COMMISSIONED

- A. Packaged VAV Air Handler and Associated Controls
- B. Heating Hot Water Boiler and Associated Controls
- C. Domestic Hot Water Systems
- D. HVAC Distribution Systems and Associated Controls
 - 1. Hot water pumps
 - 2. Variable air volume terminals
 - 3. All exhaust fans
- E. Building automation system
- F. Lighting and associated controls
- G. Photovoltaic system

1.3 DESCRIPTION

- A. Commissioning is a systematic quality improvement process to ensure that the building systems perform according to the Owner's project requirements, the basis of design, and the contract documents.
- B. Commissioning during the construction phase is intended to achieve the following specific objectives:
 - 1. Verify that applicable equipment and systems are installed per the contract documents, according to the manufacturer's recommendations, and to industry accepted standards.
 - 2. Verify that the commissioned equipment and systems are checked and functionally tested by installing contractors, including documented start-up by factory representatives.
 - 3. Verify and document that equipment and systems perform according to the Owner's project requirements, the Basis of Design and the Contract Documents.
 - 4. Verify that Operations & Maintenance (O&M) documentation is complete.

- 5. Verify that the Owner's operating personnel are trained.
- C. Deferred or seasonal commissioning may be required if commissioning during the construction phase does not fulfill the objectives listed above. Correct deficiencies and update O&M Manuals and as-builts for issues addressed during warranty period.
- D. Commissioning augments but does not replace close-out procedures and testing requirements in the Contract Documents.

1.4 **RESPONSIBILITIES**

- A. Owner and Operator Responsibilities
 - 1. Champion the commissioning process by requiring members of the commissioning team to fulfill their roles and responsibilities.
 - 2. Attend and participate in commissioning meetings.
 - 3. Review the commissioning documents including project, basis of design, commissioning plan, and commissioning report.
 - 4. Review the prefunctional checklists and functional test procedures.
 - 5. Observe and witness selected prefunctional checklists, startup, and functional tests.
 - 6. Review commissioning progress and deficiency reports.
 - 7. Coordinate the resolution of non-compliance and deficiencies identified during commissioning with A/E Team, the Contractor, and their Subs.
 - 8. Review and comment on the content of the O&M manuals.
 - 9. Witness any seasonal or deferred testing and deficiency corrections.
 - 10. Assist the Contractor in coordinating the training of owner personnel.
- B. Commissioning Agent Responsibilities
 - 1. Direct and coordinate the commissioning activities and report to the Owner.
 - 2. Provide the initial schedule of commissioning activities to the Contractor.
 - 3. Review and comment on the Design Record documentation prepared by the design team members (Campus Project Requirements, Design Narrative, Basis of Design)
 - 4. Coordinate with the Contractor to establish the final schedule of commissioning activities.
 - 5. Plan and conduct a commissioning kickoff meeting and other commissioning meetings.
 - 6. Perform site visits, as necessary, to observe component and system installations.
 - 7. Attend selected planning and job-site meetings to obtain information on construction progress.
 - 8. Request and review additional information required to perform commissioning tasks, including control sequences, O&M materials, and contractor start-up and checkout procedures.
 - 9. Develop and distribute prefunctional checklists including any comment response from reviews.
 - 10. Develop and distribute functional performance test procedures including any comment response from reviews.
 - 11. Witness and approve functional tests performed by installing contractors.
 - 12. Witness and approve re-testing as necessary.
 - 13. Participate in resolution of system deficiencies identified during commissioning The CA will suggest solutions, but the presence of the CA does not relieve the Contractor's responsibility for solving, correcting, and retesting problems. Communication on commissioning issues will be made directly with the involved parties when possible, with copies to the Owner, A/E Team, and Contractor.
 - 14. Provide the Owner with written progress reports and test results.
 - 15. Coordinate and witness any seasonal or deferred testing and deficiency corrections.
 - 16. Oversee and comment on the training of the Owner's operating personnel.

- 17. Review and comment on the content of the O&M manuals.
- 18. Provide the final commissioning report (as described in this section).
- C. A/E Team Responsibilities
 - 1. Attend the commissioning kickoff meeting and selected commissioning team meetings.
 - 2. Review and comment on Owner's Project Requirements, Commissioning Plan, and Commissioning Report.
 - 3. Based on Owner's Project Requirements develop a Basis of Design Document and provide to the CA for review.
 - 4. Perform normal submittal review, construction observation, as-built drawing preparation, O&M manual preparation, etc., as contracted.
 - 5. Respond to CA correspondence and inquiries.
 - 6. Participate in operator training.
- D. Contractor Responsibilities
 - 1. Include the cost of commissioning including sub-contractors and coordination in the total contract price.
 - 2. Contractor will be responsible to provide submittal data, commissioning documentation, O&M data and training, and information from equipment suppliers.
 - 3. Contractor will be responsible to participate in commissioning meetings, to complete and return commissioning checklists provided by the CA, to address A/E team punch list items before functional performance testing, to execute functional performance tests as directed by the CA, to correct identified deficiencies, provide training, and to provide skilled technicians familiar with this project to assist and cooperate with the CA.
 - 4. Contractor will be responsible to execute deferred or seasonal functional tests, and tests of changes made in warranty period, as directed by CA.
 - 5. Contractor shall provide and install a p/t plug at each fluid temperature sensor (hot water, chilled water, glycol, etc.), and at each fluid pressure sensor, that is an input to the control system.
 - 6. Establish a contact person for each trade or system involved in the commissioning process to facilitate effective communication during the commissioning process.
 - 7. Integrate commissioning activities into the master schedule and communicate to the CA the construction schedule, milestones, and testing plans including updates and changes.
 - 8. Attend a commissioning kickoff meeting and other meetings scheduled by the CA to facilitate the Cx process.
 - 9. Review and coordinate submittals and commissioning documents.
 - 10. Ensure the availability of progress sets of preliminary as-builts ("Redline drawings").
 - 11. Complete prefunctional checklists developed by the CA.
 - 12. Execute functional performance test procedures as directed by the CA.
 - 13. Participate in resolution of system identified deficiencies, including responding to CA correspondence and inquiries.
 - 14. Coordinate the training of owner personnel.
 - 15. Prepare O&M manuals including updating the original sequences of operation to as-built conditions.
 - 16. Provide a summary of warranty items specified for commissioned systems to ensure the intended warranty protection will be provided. For each warranted item, include the specification section number, title, description, warranty start date, end date, and Owner's obligations to maintain for warranty protection.
 - 17. Participate in any deferred and seasonal testing.
 - 18. Although activation and testing of certain equipment such as the elevator and life and fire safety equipment will be done by entities not related to the commissioning process, it is ultimately the responsibility of the contractor to ensure that these systems function as a integrated whole with the rest of the building Systems.

1.5 ABBREVIATIONS AND DEFINITIONS

A. Abbreviations

- 1. Cx: Commissioning
- 2. O&M: Operations & Maintenance
- 3. TAB: Testing, Adjusting and Balancing

B. Definitions

- 1. Acceptance of Work: When prerequisites to Acceptance of Work required by Contract Documents are fulfilled and Work is ready for use or is being used for purpose intended and state of work is so declared, in writing by Owner.
- 2. Basis of Design: Describes the systems, components, conditions and methods chosen to meet the Owner's Project Requirements.
- 3. Deferred Testing: Testing that is performed after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions that require a test to be postponed.
- 4. Deficiency: A condition in the installation or function of a component or system that is not in compliance with the Contract Documents and the Owner's Project Requirements.
- 5. Owner's Project Requirements: A document that provides the explanation of the ideas, concepts and criteria that are important to the Owner.
- 6. Factory Testing: Testing of equipment on-site or at the factory, by factory personnel with an Owner's representative present.
- 7. Functional Testing: The dynamic testing of complete systems (rather than individual components) under full operation. Systems are tested under various modes of operation and through the control system's sequences of operation. Traditional TAB does not constitute Functional Testing.
- 8. Initial Startup and Check-out: The initial starting or activating of dynamic equipment, including executing Prefunctional Checklists.
- 9. Non-Compliance: A condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Document.
- 10. Prefunctional Checklist: A list of items to inspect and test to conduct to verify proper installation of equipment developed by the CA.
- 11. Startup by Contractor: Sub-Phase of Contractor's work ending with Acceptance of Work, during which the Contractor executes a preplanned program of activities including starting, testing, inspecting, adjusting, balancing and correcting deficiencies, and other similar activities.
 - a. During this period, the Commissioning Agent or his/her representative shall be periodically on site to observe, inspect installation and startup.
 - b. Deficiencies will be noted and brought to the attention of the Contractor for resolution.
- 12. Startup Completion: When work, including Contractor Startup, except those items arising from warranty provisions of Contract Documents, has been performed to requirements of Contract Documents.

PART 2 - PRODUCTS

2.1 TEST EQUIPMENT

A. Testing equipment required to perform startup, initial checkout, and required functional performance tests shall be provided by the Contractor.

- B. System specific test equipment, tools and instruments (e.g. test equipment specific to a piece of equipment) required shall be included in the base bid price by the Contractor and retained by the Owner.
- C. Equipment shall be calibrated according to the manufacturer's recommended intervals and when dropped or damaged. Calibration tags shall be affixed or certificates provided.
- D. Control System Instrument Calibration:
 - 1. Field-installed sensors, gauges, and actuators shall be calibrated per the manufacturer's recommendations.
 - 2. Alternate calibration methods may be used, if approved by the CA.
 - 3. Test instruments shall have had NIST traceable calibration within the last 12 months.
- E. For valve and damper actuators, installing Contractor will verify the actual position against the BAS readout, and valve normal setting (normally-opened, or normally-closed).

PART 3 - EXECUTION

3.1 COMMISSIONING PLAN

- A. The Commissioning Plan is a narrative provided by the Commissioning Agent that describes the commissioning process in detail as well as details to the testing and acceptance of the equipment to be commissioned. Where there is a conflict, the Specifications and Contract Documents take precedence over the Commissioning Plan.
- B. The plan will be provided for review and comment by the Contractor within 60 days of start of construction. The Commissioning Agent will incorporate comments as appropriate, however final authority with respect to the content of the Commissioning Plan lies with the Commissioning Agent.
- C. The plan may be updated as the project progresses from design through construction.

3.2 COMMISSIONING MEETINGS

- A. The contractor and sub-contractors are required to attend a commissioning kickoff meeting within 60 days of the start of construction. Questions and comments regarding the commissioning process will be addressed. Roles, responsibilities, tasks, and a preliminary schedule for commissioning activities shall also be discussed.
- B. At the discretion of the Commissioning Agent, periodic meetings shall be held from start of construction until Acceptance of Work.
- C. The meetings shall be at the Contractor's site office or other on-site location agreed to between Commissioning Agent and Contractor.
- D. Attendees:
 - 1. Contractor's Representatives: Contractor, mechanical, plumbing and electrical subcontractors, and when so requested by Commissioning Agent, Sub-subcontractors, suppliers and other parties involved in Work. Contractor's representatives shall be qualified and authorized to act on behalf of party each represents.
 - 2. Commissioning Agent's representatives.

- E. Agenda:
 - 1. Review of progress and commissioning milestones.
 - 2. General coordination.
 - 3. Identification of problems impeding progress.
 - 4. Other business.
- F. Minutes:
 - 1. The CA shall record minutes and distribute copies to all attendees within three working days after meeting for review and comment.

3.3 REPORTING

2.

- A. General Commissioning-Related Reporting
 - 1. The CA will provide progress reports to the Owner.
 - 2. The CA will communicate with members of the commissioning team, keeping them apprised of commissioning progress.
 - 3. The CA will provide non-conformance and deficiency reports to the owner, A/E team and the contractor.
- B. Commissioning Work Products
 - 1. The commissioning process generates a number of written work products. In summary, the written products are:

Product		Developed By
a.	Commissioning Plan	CA
b.	Owner's Project Requirements	Owner
C.	Basis of Design Documents	AE
d.	Equipment Submittals	Contractor
e.	Manufacturers Start-up Forms	Contractor
f.	Prefunctional Checklists and final start-up plan	CA
g.	Final TAB report	TAB
ĥ.	Functional Performance Test Procedures	CA
i.	Operation & Maintenance Manuals	Contractor
j.	Overall training plan	Contractor
k.	Deficiency reports	CA
I.	Final commissioning report	CA

- C. Final Commissioning Report:
 - 1. The final commissioning report shall include an executive summary, list of participants and roles, brief building description, overview of commissioning and testing scope, a general description of testing and verification methods, and a brief description of commissioning results.
 - 2. Outstanding issues, deficiencies, or non-compliance items identified through the commissioning process shall be specifically listed. Future actions, commissioning process changes, etc. shall also be listed.

3.4 COMMISSIONING SUBMITTALS

- A. Copies of the specific equipment submittals for the equipment and systems to be commissioned listed in Section 1.2 shall be routed to the CA by the Contractor.
- B. Submittals include but are not limited to; equipment cut sheets, shop drawings, TAB plan, installation manuals and manufacturer startup forms, building management system point lists and detailed sequences of operation. The information shall be used to develop the prefunctional checklists and functional performance tests.

C. Copies of the submittals for the commissioned equipment will be provided to the CA for review at the same time that the A/E reviews the submittals prior to equipment purchase and the CA will comment on the submittals. The CA does not have the authority to approve or reject submittals. This authority lies solely with the A/E.

3.5 INITIAL START-UP AND CHECKOUT

- A. Parties responsible for Initial Start-up and Checkout for each system to be commissioned shall be identified by the Contractor.
- B. The Contractor provides manufacturer's start-up and checkout procedures, including control system point to point verifications, and other standard field checkout sheets.
- C. The Contractor shall submit the Start-up sheets to the CA for review and approval.
- D. The CA shall develop the Initial Start-up and Checkout plan.
- E. The Initial Start-up and Checkout plan shall include forms with specific boxes or lines for recording and documenting the specific inspections required along with a summary statement and a signature block on the form.

3.6 PREFUNCTIONAL CHECKLISTS

- A. Based on equipment submittals, contractor startup forms, manufacturer documentation and common issues the Commissioning Agent shall develop draft prefunctional checklists.
- B. The Commissioning Agent will provide the draft prefunctional checklists for the review and comment of the Contractor. Contractor comments will be incorporated as appropriate, however final authority to content lies with the Commissioning Agent.
- C. The Initial Start-up and Checkout plans including Prefunctional Checklists are the responsibility of the Contractor, who shall assign this task to the Sub-contractor, vendor, or other party responsible for equipment installation.
 - 1. Prior to, and during equipment installation and startup the checklist line items shall be completed by the individual **actually** performing the work.
 - 2. Parties responsible for indicating line items as complete shall be noted on individual line items.
 - 3. Checklists shall be spot checked by the Commissioning Agent.
- D. The contractor shall physically attach (via clear plastic sheath and zip tie) the startup plan documentation to its respective piece of equipment prior to equipment startup. Alternate ways to keep the forms are acceptable as long as they have prior approval by the CA.
- E. The Commissioning Agent shall be kept informed by the Contractor of the schedule of startup activities for each commissioned system, including power-up, manufacturer start-up, and testing & balancing.
- F. The CA shall periodically observe Initial Start-up and Checkout of equipment.
- G. Only individuals that have direct knowledge of an item on the Prefunctional Checklists shall initial that item.
- H. The Contractor shall clearly list any outstanding items that were not completed successfully, at the bottom of the relevant checklist.

- I. When complete, the checklists shall be removed from the equipment by the Contractor and provided to the Commissioning Agent for review and approval.
- J. The responsible party shall correct areas that are deficient or incomplete in the checklists and tests in a timely manner, and shall notify the CA as soon as outstanding items have been corrected.
- K. The Prefunctional Checklists shall be updated for any deficient item, after the deficiency has been corrected.
- L. The Prefunctional Checklists will be combined with contractor startup forms and manufacturer documentation to be the final Startup Plans.
- M. Any deficiencies or delays during testing due to incomplete checklist items shall be the responsibility of the Contractor.
- N. The CA will accept or reject each Prefunctional Checklist. Prefunctional checklists must be approved by the Commissioning Agent prior to functional performance testing.

3.7 FUNCTIONAL TESTING

- A. Functional Performance Testing will not commence until successful completion of the startup plans (contractor startup forms, manufacturer documentation, and prefunctional checklists) and testing & balancing.
- B. Objectives and Scope
 - 1. The objective of Functional Testing is to demonstrate that each system is operating according to the documented owner's project requirements, basis of design, and Contract Documents.
 - 2. Additionally, during the testing process, areas of deficient performance are identified and corrected, improving the operation and functioning of the systems.
 - 3. Each system to be commissioned will be operated through the modes of operation (e.g. seasonal, occupied, unoccupied, warm-up, cool-down, part- and full-load). Proper responses to such modes and to such conditions as recovery from power failure, emergency power, freeze condition, low oil pressure, no flow, equipment failure, etc. shall be tested.
- C. Development of Test Procedures
 - 1. Before test procedures are developed, the CA shall be provided with requested documentation including but not limited to a current list of change orders affecting equipment or systems, an updated points list, program code, control sequences, and system parameters.
 - 2. The CA shall develop specific test procedures to verify and document proper operation of each piece of equipment and system. At the discretion of the Commissioning Agent, sampling strategies may be employed for like pieces of identical equipment.
 - 3. Within 60 days of the start of construction, the Contractor and A/E team shall review and comment on the functional test procedures. These test procedures may change due to changes in sequence of operations or other changes in the project.
 - 4. The CA shall be provided with Owner-contracted factory testing or required Owner acceptance tests.

- D. General Functional Testing Methods
 - 1. Functional Testing will be achieved by testing and direct observation of system operation. Monitoring system performance and analyzing the results using the control system's trend log capabilities may also be employed.
 - 2. Functional Testing Sequence:
 - a. Functional Testing is conducted after Initial Startup and Checkout including prefunctional checklists have been approved by the CA.
 - b. The air and water balancing is completed and reviewed by the CA before Functional Testing of air-related or water-related equipment or systems.
 - 3. Functional Testing Setup
 - a. Each functional test shall be coordinated and scheduled by the Contractor and the CA.
 - b. Each functional test shall be performed under conditions that simulate actual conditions whenever possible.
 - c. The Sub-Contractor(s) executing the test shall provide necessary materials, system modifications, etc. to produce the flows, pressures, temperatures, etc. necessary to execute the test according to the specified conditions.
- E. Control Signal Manipulation
 - 1. Actual Conditions: Testing system and equipment to experience actual operating conditions and legitimate control signals is preferred, although it will not always be feasible that the system to be commissioned will experience the full range of operating conditions within the scheduled testing period.
 - 2. Simulated Conditions: Simulated conditions shall be used as necessary in order to test the systems in all operating conditions.
 - 3. Overwritten Values: The controls contractor will overwrite values and alter setpoints at the discretion of the CA.
 - 4. Altering Setpoints: Altering system setpoints to test a sequence will be employed as necessary in the Functional Testing.
 - 5. Trend Logs: A 96 hour trend log will be provided to the CA by the Contractor.
- F. The CA will assist with deficiency resolution however the burden of responsibility to solve, correct, and retest problems is with the Contractor, Subs and A/E.

3.8 DEFERRED AND SEASONAL TESTING

- A. Seasonal Testing
 - 1. During the warranty period, seasonal testing shall be at the discretion of the CA.
 - 2. The CA shall direct the testing.
 - 3. Tests will be executed, documented and deficiencies corrected. Any final adjustments to the O&M manuals and as-builts due to the testing will be made by the Contractor.
- B. Deferred Tests
 - 1. If any check or test cannot be completed due to the building structure, required occupancy condition or other situation, execution of checklists and Functional Testing may be delayed upon approval of the Owner.
 - 2. Deferred tests will be conducted in the same manner as the seasonal tests.
 - 3. Services of necessary parties will be negotiated.

3.9 OPERATIONS & MAINTENANCE DOCUMENTATION

A. The Contractor will provide the Owner with Operations and Maintenance (O&M) information, per the provisions in the contract documents including Divisions 15, and 16.

- B. Prior to substantial completion, the CA shall be provided with the O&M submittals, manuals, and documentation for commissioned systems.
- C. The CA will review each O&M manual submittal for commissioned systems. This review does not supersede the A/E's review of the O&M manuals according to the A/E's contract.

3.10 OPERATIONS & MAINTENANCE TRAINING

- A. The Contractor shall be responsible for ensuring that training is provided and completed for commissioned systems. The Contractor and CA will coordinate and schedule the training of the commissioned systems.
- B. The CA oversees training and monitors the execution of it. The CA shall review the content and adequacy of the training of Owner personnel for commissioned equipment. The CA shall meet with the owner to determine the needs of Owner personnel and provide feedback to the Contractor. The CA shall provide the Contractor with sample agenda forms.
- C. The Owner will provide videotaping of the training sessions and the tapes added to the O&M manuals.
- D. In addition to these general requirements, the specific training requirements of Owner personnel are specified in Divisions 15 and 16.

3.11 NON-COMPLIANCE

- A. The CA will record the results of the Functional Testing on the procedure or test form. Deficiencies or non-compliance issues shall be noted and reported to the owner, A/E team and the Contractor.
- B. Corrections of minor issues identified shall be made during the tests at the discretion of the CA. In such cases the issue and resolution will be documented on the procedure form.
- C. As tests progress and issues are identified, the CA will inform the Contractor.
- D. When there is no dispute on the non-compliance issue and the Contractor or Sub-contractor accepts responsibility to correct it:
 - 1. The CA documents the issue and the Sub-contractor's response and intentions and they go on to another test or sequence
 - 2. The CA reschedules the test and the test is repeated until performance satisfactory to the CA is achieved.
- E. If there is a dispute about a non-compliance issue, regarding whether it is a deficiency or who is responsible:
 - 1. The issue shall be documented along with the response and provided to the Contractor.
 - 2. Final design interpretive authority is with the A/E. Final acceptance authority is with the Owner.
 - 3. The CA documents the resolution process.
- F. The Contractor is responsible to repeat a Prefunctional Checklist or Functional Test after deficiencies are corrected.
- G. Retesting shall not be a justified reason for a claim of delay or for a time extension by the prime contractor.

3.12 PROJECT CLOSE-OUT

- A. The commissioning process shall be completed when the systems operate according to the Owner's design intent and the Contract Documents, as determined by the CA.
- B. The commissioning process may continue past substantial completion of the Project, until noncompliance issues have been resolved.

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Construction Drawings, Technical Specifications, Addenda, and general provisions of the Contract, including Contract General Conditions and Supplementary General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

- A. Administrative and procedural requirements for instructing University's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems and equipment.
 - 2. Training in proper operation and maintenance of systems, subsystems, and equipment installed under the Contract.

1.3 RELATED SECTIONS

A. Section 01783 - Operation and Maintenance Data: Operating and maintenance instructions to be used during training and demonstration.

1.4 SUBMITTALS

- A. Instruction Program: Contractor shall submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Contractor shall include learning objective and outline for each training module. Contractor shall:
 - 1. Make the operations and procedures manuals available for use during the training sessions.
 - 2. Schedule submission of instruction program to allow sufficient time for receipt, review and acceptance of instruction program by the Architect and the University's Representative and shall be not less than three weeks prior to proposed date of first training session.
 - 3. Submit, at completion of training, three complete training manuals for University's use.
- B. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Contractor shall include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- C. Attendance Record: For each training module, Contractor shall submit list of participants and length of instruction time.
- D. Evaluations: For each participant and for each training module, Contractor shall submit results and documentation of performance-based test.
- E. Demonstration and Training Video Record: Contractor shall submit two copies at end of each training session.

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: Contractor shall engage a qualified facilitator to prepare instruction

program and training modules, to coordinate instructors, and to coordinate between Contractor and University's Representative for number of participants, instruction times, and location. Facilitator shall be firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

- B. Instructor Qualifications: Contractor shall engage qualified instructors to instruct University's personnel how to adjust, operate, and maintain systems, subsystems, and equipment not part of a system. Instructors shall be factory-authorized service representatives, complying with requirements in Section 01450 Quality Control, experienced in operation and maintenance procedures and training.
 - System manufacturers shall provide qualified instructor to describe system design, operational requirements, criteria, and regulatory requirements.
 - 2. University's Representative will furnish Contractor with names and positions of participants.
- C. Pre-Instruction Conference: Contractor shall conduct conference at Project site to comply with requirements in Section 01310 Coordination. Contractor shall review methods and procedures related to demonstration and training including, but not limited to, the following:
 - 1. Inspect and discuss locations and other facilities required for instruction.

EDIT SUBPARAPH BELOW TO SUIT PROJECT REQUIREMENTS.

- 2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
- 3. Review required content of instruction.
- 4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

- A. Coordination of Instruction Schedule: Contractor shall coordinate instruction schedule with University's operations. Contractor shall adjust schedule as required to minimize disrupting University's operations.
- B. Coordination of Instructors: Contractor shall coordinate instructors, including providing notification of dates, times, length of instruction time, and course content. Contractor shall allow for 30 days written notice to University's Representative.
- C. Coordination with Operation and Maintenance Data: Contractor shall coordinate content of training modules with content of approved emergency, operation, and maintenance manuals.
 - 1. Contractor shall not submit instruction program until operation and maintenance data have been reviewed and accepted by Architect and copies given to University's Representative.
 - 2. Contractor shall coordinate review of operation and maintenance data to make operation and maintenance data available at least two weeks prior to date scheduled for initial training session.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Contractor shall develop an instruction program that includes individual training sessions for each system and operating products not part of a system, as required by Division 2 through 17 Specification Sections. Contractor shall include instruction on operational interfaces between systems.

- B. Schedule of Training Sessions: Contractor shall arrange to have training conducted on consecutive days, with no more than six hours of training scheduled for any one day. Concurrent classes will not be acceptable.
- C. Training Sessions, General: Contractor shall develop a learning objective and teaching outline for each session. Contractor shall include a description of specific skills and knowledge that participant is expected to master. Training sessions shall progress logically. Each training session shall be comprised of time spent both in the classroom and at specific location of subject equipment or system. As a minimum, Contractor shall ensure that each training session covers the following subjects for each item of equipment and system:
 - 1. Familiarization:
 - a. Review catalog, parts lists, drawings, etc., which have been previously provided for the plant files and operation and maintenance manuals.
 - b. Check out the installation of the specific equipment items.
 - c. Demonstrate the unit and indicate how all parts of the specifications are met.
 - d. Answer questions.
 - 2. Safety:
 - a. Using material previously provided, review safety references.
 - b. Discuss proper precautions around equipment.
 - 3. Operation:
 - a. Using material previously provided, review reference literature.
 - b. Explain all modes of operation (including emergency).
 - c. Check out University's personnel on proper use of the equipment.
 - 4. Preventive Maintenance:
 - a. Using material previously provided, review preventive maintenance (PM) lists including:
 - 1) Reference material.
 - 2) Daily, weekly, monthly, quarterly, semiannual, and annual jobs.
 - b. Demonstrate how to perform Preventive Maintenance tasks.
 - c. Demonstrate to University's personnel what to look for as indicators of equipment problems.
 - 5. Corrective Maintenance:
 - a. List possible problems.
 - b. Discuss repairs--point out special problems.
 - c. Open up equipment and demonstrate procedures, where practical.
 - 6. Parts:
 - a. Show how to use previously provided parts list and order parts.
 - b. Check over spare parts on hand. Make recommendations regarding additional parts that should be available.
 - 7. Local Representatives:
 - a. Where to order parts: Name, address, telephone.
 - b. Service problems:
 - 1) Who to call.
 - 2) How to get emergency help.
 - 8. Operation and Maintenance Manuals:
 - a. Review any other material submitted.

- b. Update material, as required.
- D. Classroom Training for Operations Personnel:
 - 1. Using projected drawings and photographs, describe and discuss equipment locations in plant and present operational overview of systems. Thoroughly discuss operating and maintenance manuals.
 - 2. Describe purpose and plant function of equipment and systems.
 - 3. Describe operating theory of equipment.
 - 4. Describe start-up, shutdown, normal operation and emergency operating procedures, including discussion of system integration and electrical interlocks, if any.
 - 5. Identify and discuss safety items and procedures.
 - 6. Describe routine preventive maintenance, including specific details on lubrication and maintenance of corrosion protection of the equipment and ancillary components.
 - 7. Describe operator detection, without test instruments, of specific equipment trouble symptoms.
 - 8. Describe required equipment performance test procedures and intervals.
 - 9. Describe routine disassembly and assembly of equipment if applicable (as determined by University's Representative on case-by-case basis) for purposes such as operator inspection of equipment.
- E. Classroom Training for Maintenance and Repair Personnel:
 - 1. Theory of operation.
 - 2. Description and function of equipment.
 - 3. Start-up and shutdown procedures.
 - 4. Normal and major repair procedures.
 - 5. Equipment inspection and troubleshooting procedures including the use of applicable test instruments and the "pass" and "no pass" test instrument readings.
 - 6. Routine and long-term calibration procedures.
 - 7. Safety procedures.
 - 8. Preventive maintenance such as lubrication; normal maintenance such as belt, seal, and bearing replacement; and up to major repairs such as replacement of major equipment part(s) with the use of special tools, bridge cranes, welding jigs, etc.
- F. Field Training for Operations Personnel:
 - 1. Identify locations of equipment components and controls.
 - 2. Review of component functions and theory of operation.
 - 3. Identifying piping and flow options.
 - 4. Identifying valves and explain their functions at various settings.
 - 5. Identifying instrumentation:
 - a. Location of primary element.
 - b. Location of instrument readout.
 - c. Discuss purpose, basic operation, and information interpretation.
 - 6. Discuss, demonstrate, and perform standard operating procedures and round checks, including system start-up and shutdown procedures.
 - 7. Review and perform safety procedures.
 - 8. Perform the required equipment exercise procedures.
 - 9. Discuss and perform preventive maintenance activities.
 - 10. Identify and review safety items and perform safety procedures, if feasible.
- G. Field Training for Maintenance and Repair Personnel: In addition to field training specified above for operations personnel, include the following:
 - 1. Describe normal repair procedures.
 - 2. Perform routine disassembly and assembly of equipment, if applicable, for inspections and tests.
 - 3. Perform routine maintenance and repair tasks, including mechanical and electrical operations
for troubleshooting, adjustments and calibration.

- H. Presentation Media:
 - 1. Presentations shall utilize computer-generated, projected graphics utilizing Microsoft PowerPoint software, including animation as appropriate to enhanced presentation and viewer interest. Graphics shall include text and still and moving images. PowerPoint presentation shall be suitable for incorporation into video record of instruction.
 - 2. Each session shall include mock-ups, samples and other visual aids as appropriate.
 - 3. Each session shall include printed handouts and notes for each participant.
 - 4. Produce sufficient printed materials to provide minimum of five unused copies for University's use in subsequent training programs.
- I. Video Record: Each training session shall be recorded and reproduced on both VHS tape and DVD compact disk. Video media shall be labeled with permanent computer-printed labels.

PART 3 - EXECUTION

3.1 INSTRUCTION

- A. Preparation. Contractor shall:
 - 1. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
 - 2. Set up instructional equipment at instruction location.
- B. Scheduling: Contractor shall provide instruction at mutually agreed on times. For equipment that requires seasonal operation, Contractor shall provide similar instruction at start of each season. Contractor shall:
 - 1. Schedule training through University's Representative.
 - 2. Schedule training at time and location convenient to University, with at least 14 calendar days' advance written notice to University's Representative.
- C. Training Sessions: Contractor shall conduct classroom and field training sessions presenting content specified in Article 2.1, titled "Instruction Program," above.
- D. Evaluation: At conclusion of each training session, Contractor shall assess and document each participant's mastery of module by use of written examination or performance-based demonstration test.
- E. Demonstration and Training Video Tapes: Contractor shall retain services of commercial videotaping and production service to record each training session. After taping, video material shall be edited and supplemented with professionally-produced graphics, animation and narration to provide a permanent record for use by University's for continuing training of personnel. Contractor shall:
 - 1. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
 - 2. At the beginning of each training module, record each chart containing learning objective and lesson outline.
 - 3. Contractor shall advise all manufacturers providing training sessions that training session and material will be videotaped and shall make available to videotaping service such utility services and accommodation as may be required to facilitate the production of videotape record.
 - 4. Demonstration and training videotapes shall incorporate PowerPoint graphic notes.
- F. Cleanup. Contractor shall:

- 1. Collect used and leftover educational materials and deliver to University as directed by University's Representative.
- 2. Remove instructional equipment.
- 3. Restore systems and equipment to condition existing before initial training use.

END OF SECTION