CONSTRUCTION DOCUMENT PROJECT MANUAL

HUMBOLDT STATE UNIVERSITY

Fire Alarm Replacement Library and Music A

HSU Project #XPL250

Owner: California State University

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SECTION 01 01 00: SUMMARY OF 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 SECTION INCLUDES

A. Work Included in the Contract
B. Permits, Licenses, and Fees
C. Contract Time & Liquidated Damages
D. Partnering

1.3 WORK INCLUDED IN THE CONTRACT

A. Work Included in the Contract: All coordination, construction, and services required for Humboldt State University Fire Alarm Replacement for Library and Music A buildings at Humboldt State University located in Arcata, California. This includes complete new fire alarm systems for these buildings as shown in the contract documents.

Base Bid:

Library -- HSU Bldg #041
Music A -- HSU Bldg #008A

1.4 PERMITS, LICENSES AND FEES

A. Permits, Licenses and Fees, General: Refer to Contract General Conditions, Article 35.11. Also see Section 01 41 00 Regulatory Requirements for applicable codes, regulations, and ordinances, as well as responsibilities for fees of authorities having jurisdiction.

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 01 55 00 Vehicular Access and Parking for additional parking requirements during construction.

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 CONTRACT TIME

A. Contract Time, General:

a. Refer to Contract General Conditions Section 35.15 Contract Time.

B. Completion:

a. **Contractor shall achieve Total Construction Completion no later than January 12, 2021.** Total Construction Completion, for the purposes of this project, is defined as the condition in which all Work is fully complete for the Project and all associated components are fully installed, programmed, tested, and in operation with the written approval of the Campus Deputy Building Official and Deputy State Fire Marshall and for which a Final Certificate of Occupancy has been granted by the Campus Deputy Building Official and Deputy State Fire Marshal. In addition, all demolition of the old fire alarm system and all patching and painting is to be complete.

b. **Contractor shall achieve Total Project Completion no later than February 9, 2021.** Total Project Completion, for the purposes of this project, is defined as the condition in which all Work is fully complete for the Project including all conditions of the Contract including, but not limited to Record Documents, warranties and completion documents fully submitted and accepted by the University.

c. Work on the Project, including design and submittals, can commence upon issuance of the Notice To Proceed. Construction activities shall commence on May 18, 2020 and occur during school break periods of May 18, 2020 to August 14, 2020 and from December 19, 2020 to January 12, 2021.

d. See Contract General Conditions, including Article 35.15 for Contract Time requirements.

e. The Contractor shall not have the right to an adjustment in the time of completion due to weather conditions or industrial conditions which are normal for the locality of the site. The time for completion of the Contract has been calculated with consideration given to the average climatic range and usual industrial conditions prevailing in the locality of the site.

f. Retention will not be released until Total Completion has been achieved.

1.3 PARTNERING

A. The University intends to encourage the foundation of a cohesive partnership with the Contractor and its Subcontractors, the Architect and its consultants, and the University. 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.

PART 2 – PRODUCTS (Not Used)
PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01 03 00: BID ALTERNATES

PART 1 - GENERAL (Not Used)
PART 2 – PRODUCTS (Not Used)
PART 3 – EXECUTION (Not Used)

END OF SECTION

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SECTION 01 14 00: 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 SECTION INCLUDES

A. Contractor's Use of Premises and Site, General
B. University's Use of Premises and Site, General
C. Keys to University Facilities
D. Working Hours
E. Noise and Vibration Restrictions
F. Smoking
G. Site Decorum
H. Notification Required by CA Penal Code 290
I. Cultural Resources

1.3 CONTRACTOR'S USE OF PREMISES AND SITE, GENERAL

A. Contractor shall at all times perform Work so as to impose no hardship on the University or others engaged in the University' work under other Contracts nor cause unreasonable delays or hindrance thereto.
B. Construction activities shall be scheduled to minimize disruption to the University and to Campus users.
C. Contractor may not interrupt any Campus utilities without prior written permission from the University. Refer to Section 01 51 00 Temporary Utilities.
D. Refer to Section 01 52 00 Construction Area and Temporary Facilities for specific requirements and restrictions related to the Contractor's use of the Project Area.
E. Refer to Section 01 55 00 Vehicular Access and Parking for specific requirements related to access routes and parking permit requirements.

1.4 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 total Work.
B. Full University Occupancy: University will occupy adjacent site and adjacent 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.
C. 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.

D. Upon occupancy, University will assume responsibility for maintenance and custodial service for occupied portions of building.

1.5 KEYS TO UNIVERSITY FACILITIES

A. Submit Key Requests: Access to University facilities shall be requested in writing, reasonably in advance of the period of the desired access. Contractor shall indicate the justification for the access, individuals to be granted access and the specific period of access requested.

B. The University maintains the right to deny key request where it is determined that the Work may be completed without key being issued, or where Contractor fails to comply with any key related policy or procedure. By accepting any issued keys, such acceptance constitutes Contractors agreement to all policies and requirements. A signature may also be required. Upon completion of the Work, Contractor shall return all University-issued keys to the University. If the Contractor fails to return all keys issued, the Contractor shall be liable for the total cost of labor and materials to re-key all areas accessible with the lost keys. Lost or stolen keys shall be reported immediately to the University Police Department. The Contractor may not make duplicate keys.

1.6 WORKING HOURS

A. Normal Work Hours: Contractor's Work shall usually be limited to Monday through Friday, during hours of 7:00am to 5:00pm.

1. Work on other days and at other hours than those listed above shall be only with written approval of University's Representative and such Work shall be performed at no additional Contract Time or Contract Sum. The following three items are examples where this may be required:
    a. Where it is determined necessary to perform Work outside of normal hours or days in order for the Contractor to avoid conflicts with the University's other campus activities and facilities.
    b. Work during final exam periods shall be restricted to minimize noise, vibrations and other distracting and inhibiting activities. Consult University calendar for dates and show on Construction Schedule in accordance with Section 01 32 00.
    c. If the Contractor determines that it is necessary to perform Work during additional hours, or for weekends and holidays, in order to meet milestone and final completion dates. Note that inspections may not be available outside of normal working hours.

1.7 NOISE AND VIBRATION RESTRICTIONS

A. Comply with the provisions of General Conditions 35.03.c, which requires the Contractor to comply with all sound control and noise level rules, regulations, and ordinances. The following more detailed requirements shall be considered as rules for all Work as part of this project. Contractor shall not cause or allow sounds to be produced in excess of 65 decibels measured at the job site between the hours of 7:00 p.m. and 7:00 a.m. Design-Builder shall not cause or allow sounds to be produced in excess of 85 decibels measured at the job site between the hours of 7:00 a.m. and 7:00 p.m. without the consent of the University.Perform all work in a manner that will produce a noise level not to exceed 80 dBA as measured at 50 feet from the project site boundary unless otherwise indicated. The Contractor shall instruct all workers in noise control procedures. These rules shall be in addition to any worker safety requirements in accordance with anyoccupational safety regulations.

B. Equipment: Equip jack hammers with exhaust mufflers and steel muffling sleeves. Air compressors should be of a quiet type such as a "whisperized" compressor. Compressor hoods shall be closed while equipment is in operation. Use electrically powered rather than gasoline or diesel powered fork lifts. Provide portable noise barriers around jack hammering.

C. Operations: Keep noisy equipment as far as possible from noise sensitive site acitivities. Machines shall not be left idling. Use electric power in lieu of internal combustion engine where possible. Maintain equipment properly to reduce noise from excessive vibration, faulty mufflers, or other sources. All engines shall have properly functioning mufflers.

D. Scheduling: Schedule noisy operations so as to minimize their duration at any given location, and to minimize disruption to the adjoining users. Notify the University in writing not less than 7 days in advance of performing work creating noise in excess of that specified in Paragraph A, and schedule such work at times mutually agreeable.

E. Cooperate with the University if the use of noisy equipment becomes objectionable. The University reserve the right, at their own discretion, to require a limitation on the use of such equipment to designated hours appropriate to each location.

E. Do not play radios, music players, televisions, and other similar items at construction site. Workers shall not yell or shout as a means of communication.

1.8 SMOKING

A. Contractor's personnel shall adhere to the University smoking policy while on campus. The campus is a smoke and tobacco free environment. The full University Smoking Policy is available at the following address: http://www2.humboldt.edu/smoking/

1.9 SITE DECORUM

A. Control the conduct of Contractor's forces and prevent unwanted interaction initiated by workers with the University staff, students or visitors other than those directly associated with the project.

B. In the event that any worker initiates unwanted interaction, utilizes profanity, or (in the opinion of the University) conducts him/herself in an offensive or unprofessional manner, immediately remove the worker from the project and replace said worker with another of equivalent technical skill at no additional cost to the University.

2.0 NOTIFICATIONS REQUIRED BY CA PENAL CODE 290

A. Contractor shall advise all of its personnel working on campus, that if they are required to register under California Penal Code Section 290 Sex Offender Registration Act, that they shall report that status to the Humboldt State University Police Department, where required.

1.10 CULTURAL RESOURCES

A. Cultural Resources Procedures: Requirements specified in this Section are in addition to those

required by Article 35.03 of the Contract General Conditions.

B. This Project does not pass through any known archaeological sites. However, it is conceivable that unrecorded archaeological sites could be discovered during construction.

C. 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 University Representative, and comply with applicable laws.

D. University may retain an Archaeologist or other appropriately qualified persons to monitor and recover data and artifacts during period that work has ceased.

E. All items found which are considered to have archaeological significance are the property of the University.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 26 13: REQUESTS FOR INTERPRETATION

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 01 31 00 – Project Coordination: Requirements for organizing and coordinating the Work.
B. Section 01 33 00 - Submittals Procedures: Restriction on use of submittals for changes in materials, products, equipment and systems.
C. Section 01 63 00 - 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 University or 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:
   1. RFIs shall be issued from the General Contractor to the University Project Representative in electronic format by email, as an attached PDF file. Wherever possible, the RFI will be bound into a single PDF file, with the transmittal letter as the first page, followed by the remaining contents.
   2. Each RFI shall be given a discrete, consecutive number.
   3. RFIs shall be prepared and submitted on a template provided by the University.
   4. 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.

1. 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. This may include coordination drawings to be prepared by the Contractor, even when not specified as a required submittal.
2. If information included with this type RFI by the Contractor is insufficient, the RFI will be returned unanswered.

DI. Unacceptable Uses for RFIs: RFIs shall not be used to request the following:
1. Approval of submittals (use procedure specified in Section 01 33 00 - Submittals Procedures)
2. Approval of substitutions (refer to Section 01 63 00 - 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).

DII. 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 38 of the Contract General Conditions.

DIII. RFI Log: Contractor shall prepare and maintain a log of RFIs, which shall be reviewed at each Construction Progress Meeting in accordance with Section 01 31 20 Project Meetings.

DIV. Distribution of RFI's: The University Representative will forward RFI's to the project Architect and will manage and be included in all communications among Contractor and Architect, where necessary. The University will issue all official RFl responses back to the Contractor.

DV. RFI Processing Time: See Contract General Conditions and Supplementary General Conditions for additional requirements. No extension of Contract Time will be authorized because of failure to transmit complete and appropriate RFI to the University sufficiently in advance of the Work. University will return RFIs to Contractor with reasonable promptness.

PART 2 – PRODUCTS (Not Used)
PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01 31 00: PROJECT 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 01 01 00 - Summary of Work: Overall Project description including various types of Work to be coordinated.

B. Section 01 60 00 - Product Requirements: Coordination of products, especially general requirements for system completeness and product substitutions.

C. Section 01 64 00 Owner-Furnished Products: Related requirements and responsibilities.

1.4 PROJECT COORDINATION

A. 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 the total work.
   b. 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.
   c. Coordinate the work of subcontractors and material suppliers, so that their work is performed in a manner to minimize interference and facilitate progress of the work.

2. 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.

3. Provide anchorage, blocking, and other connections as required for a complete project.

4. Do not obstruct spaces required by Code in front of electrical equipment, access doors, etc. Do not cover any piping, wiring, ducts, etc., until properly inspected and approved.

5. Remove and replace any and all Work under any Section which is not in accordance with the Contract Documents. Repair or replace all Work damaged by these operations at no increase in contract price or contract time.

B. 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.

C. 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 University in a timely manner during the bidding period, for determination and direction by the Architect in accordance with provisions of the Contract General Conditions.

B. Construction Interfacing and Coordination: Layout, scheduling and sequencing of Work shall be solely the Contractor's responsibility. Contractor shall verify, confirm and coordinate field measurements so that new construction correctly and accurately interfaces with conditions existing prior to construction.

1.5 SUPERINDENDENCE OF THE WORK

A. Superintendence of Work: Contractor shall appoint a field superintendent and 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.

1.6 CONCURRENT WORK UNDER SEPARATE CONTRACTS

C. 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. 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".

D. 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.

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.

1.6 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.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.1 COORDINATION REQUIRED

A Coordinate progress schedules, including dates for submittals and for delivery of products.

B. 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.

C. 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.

D. Resolve conflicts by providing technical advice, coordination drawings and three dimensional representations of integrated system components.

E. 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.

F. 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 three-dimensional 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.

3.3 COORDINATION OF SUBMITTALS

A. Coordinate the review and processing procedures of all submittals in accordance with Section 01 33 00 - Submittals Procedures

3.4 COORDINATION OF SUBSTITUTIONS AND MODIFICATIONS

A. Coordinate the review and processing procedures of all proposed product substitutions in accordance with Section 01 63 00 - Product Substitution Procedures.

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 with connections to utilities, building services and controls and 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.

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.

D. 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.

END OF SECTION

SECTION 01 31 20: 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 PRECONSTRUCTION MEETING (CONFERENCE)

A. Preconstruction Meeting: Contractor shall administer an on-site preconstruction meeting immediately following the date established in the Notice to Proceed and prior to Contractor mobilization. Include representatives of the University, Architect, Contractor, and all subcontractors, as appropriate.

B. Agenda: Preconstruction meeting shall cover the following topics, as a minimum:

1. Special Project Procedures: Site access restrictions 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, phone number, and address list that includes the following, at a minimum:
   a. Contractor: Project Manager and Superintendent.
   b. Subcontractors: Contact person. Include brief description of scope of work.
   c. Major materials suppliers: Contact person.
   d. University Representative Project Manager
   e. Authorities Having Jurisdiction and designated inspectors
   f. Emergency Services contacts.

3. Coordination: Review requirements for Contractor's coordination of Work. Review sequence and schedule for work being performed for University under separate contracts, if any. Discuss coordination of construction to minimize impacts on continuing Campus operations.

4. Project Communication Procedures: Review requirements and administrative requirements for written and oral communications.

5. 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.

6. Security: Review requirements for Contractor to develop and implement site security.

3. Safety Program: Review requirements for Contractor to develop and implement safety program.

4. Site Access by University's Representative and Architect: Review requirements and procedures Contractor may wish to institute for identification and reporting purposes.

5. Permits and Fees: Review requirements, schedule, process, and fees for obtaining permits.

6. Project Layout: Review requirements for laying out of Work, including surveying requirements.

7. Construction Facilities: Designate storage and staging areas, construction office areas and parking areas and review site access requirements.

8. Temporary Utilities: Requirements for establishing and paying for temporary water, power, lighting and other utility services during construction, including metering and allowances.

9. Construction Progress Schedules: Review requirements for preparation and updating of construction progress and submittals schedules.

10. Payment Procedures: Review requirements for preparation and submission of applications for progress payments and for final payment.

11. Change Procedures: Review requirements and administrative procedures for Change Orders, Field Instructions and Contractor's Requests for Interpretation (RFI).

12. Submittals Administration: Review administrative procedures for shop drawings, product data and samples submittals and review of preliminary Submittals Schedule.

13. Materials and Equipment: Review substitution or equal product requirements; schedule for major equipment purchases and deliveries; review products / equipment to be provided by University.

14. Testing and Inspection: Review tests and inspections to be performed by the following:
    d. University Representatives
    b. Independent testing and inspection agency.
    c. Manufacturers and installers.
    d. Serving utilities and public agencies.
    e. Authorities having jurisdiction.

15. Operation and Maintenance Manuals: Format and content of operation and maintenance manuals.

16. Demonstration and Training: Review requirements and scheduling of instruction of University personnel specified in other sections.

17. Starting and Adjusting Procedures: Review requirements of starting and adjusting operating components.

18. Project Record Documents: Review requirements and procedures for preparing, maintaining, reviewing, and submitting project record drawings and specifications.

19. Construction Cleaning: Review requirements for progress and final cleaning.

20. Contract Closeout: Review procedures for Notice of Completion, final payment and submittals.

1.3 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, as well as specific action items shall be entered into the written record (minutes) of the meeting by the Contractor. Each discussion item at construction progress meetings shall be numerically identified and carried through subsequent meeting minutes until resolved. Minutes shall be submitted to the University by email within two business days of the meeting for review and comment.

B. Frequency: Frequency shall be as determined necessary for progress of Work. It is intended that construction progress meetings be held at weekly intervals.

C. Administration: Contractor shall make physical arrangements for meetings and shall prepare agenda with copies for participants, preside at meetings, record and distribute minutes.

D. Attendance: Contractor's project manager and jobsite superintendent, who is qualified and authorized to act on behalf of the Contractor shall attend each meeting. Contractor's subcontractors and suppliers may attend as appropriate to subject under discussion. University's Representative will attend each meeting. The Architect may also attend some meetings, either in person or through phone or online conference.

E. Default Agenda for Each Construction Progress Meeting:

1. Meeting Minutes: Review and correct, if necessary, minutes of previous meeting. Discrepancies to minutes shall be settled prior to, or at the beginning of the next meeting.

2. Progress of the Work: Since last meeting and proposed progress.
   a. Identify potential issues which might impede progress.
   b. Develop corrective measures and procedures, including but not necessarily limited to additional workers to regain planned schedule.
   c. Review three-week "look ahead" construction schedule.

3. Ordering Status: Review status of long-lead time equipment and materials delivery.

4. RFI Status: Review status of Requests for Interpretation (RFI) status.

5. Submittals Status: Review progress of shop drawings, product data, sample submissions, and proposed substitutions.

6. Contract Modifications: Review potential Change Orders and Schedule of Values.

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 quality, security, and safety issues.

F. Meeting Time and Location: As mutually agreed by the Contractor, and the University's Representative at on-site location.

G. Special Meetings: As necessary convene special meetings to discuss specific construction issues.

1.4 PRE-INSTALLATION CONFERENCES

A. Pre-Installation Conferences: When specified in individual product specification Sections, or where otherwise determined to be necessary in order to achieve quality finished Work, convene a pre-installation conference prior to commencing activities.

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.

1.7 CONTRACTOR'S OTHER MEETINGS

A. This Section does not limit meetings among the Contractor, subcontractors, and others as necessary.

1.8 CONTRACT COMPLETION MEETING

A. Contract Closeout Meeting: As specified in Section 01 77 00 - Contract Closeout Procedures.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 32 00: CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 GENERAL

0.1 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.

0.2 SECTION INCLUDES

A. Administrative and procedural requirements for documenting the progress of construction.

0.3 RELATED SECTIONS

A. Section 01 33 00 Submittals Procedures: for general requirements for all submittals.
B. Section 01 31 20 Project Meetings: for review of schedule and daily reports.

0.4 SUBMITTALS

A. See requirements below for each of the following submittals:
   1. Contractor's Initial Construction Schedule
   2. Progress Construction Schedule
   3. Daily Construction Reports

1.02 CONTRACTOR'S INITIAL CONSTRUCTION SCHEDULE

A. Review Contract General Conditions Section 35.16 for required contents and format of the Contractor's Initial Construction Schedule, which requires preparation and submittal to the Construction Administrator the Contractor's Initial Construction Schedule within fifteen (15) Days after the starting date on the Notice to Proceed.

B. Contractor's Construction Schedules shall be submitted in electronic format in compliance with the general requirements per Section 01 33 00 Submittals Procedures.

C. The Schedule Software shall be Microsoft Project (2013 or newer edition), or an approved similar. Submittals shall include both the original file in its native format as well as a PDF generated from that same file at the same saved state.

1.03 PROGRESS CONSTRUCTION SCHEDULE

A. Review the Construction Schedule at each Construction Progress Meeting.

B. Submit an updated, revised to date, Progress Schedule prior to each Application for Payment including updated Construction Schedule and narrative report.

1.04 DAILY CONSTRUCTION REPORTS

A. In accordance with Contract General Conditions Sections 35.17, the Superintendent shall prepare and submit a Daily Construction Report.

B. Contractor shall submit Daily Field Reports to the University's Project Manager no later than five work days after the date reported. This weekly submittal shall coincide with each Construction Progress Meeting. The reports shall be signed by the Contractor's on-site representative. Electronic signatures may be accepted. Some information on the Daily Construction Report may be from a Subcontractor, but it must go through and be approved by the Contractor prior to being submitted to the University.

C. Contractor's Daily Construction Reports shall include the following, at a minimum, and shall utilize the form provided by or otherwise approved by the University:
   a. Date being reported
   b. Weather conditions
   c. Quantity of each type of trade worker listed by trade and employer
   d. Subcontractors, consultants, vendors, visitors and others who have been present at the project site during the date being reported.
   e. Materials delivered to the project site.
   f. Major equipment present on the project site (i.e., lifts, material handlers, etc.).
   g. Major tasks performed cross referenced to the project schedule with notations regarding start/completion of tasks, issues or challenges encountered and impact on project schedule, inspections or tests conducted, work reviewed and its status as accepted or otherwise.
   h. Specific documentation regarding all work in dispute or being conducted under a time and materials direction by the University. Documentation must include a full and specific description of the work achieved along with specific documentation regarding the resources utilized to complete such work.
   i. Occurrence of Meetings (i.e., pre-construction, owner, coordination, safety, etc.). Minutes and attendance documentation must be submitted within 7 calendar days of said meeting.
   j. Accidents, unusual events or citations/notices received from authorities having jurisdiction or regulatory authorities.
   k. If progress, quality or conformance to the contract documents are or will be impacted, the source and extent of the impact and the specific type of work impacted.
   l. Signature of Superintendent.

END OF SECTION

SECTION 01 33 00: SUBMITTALS 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 submittal procedures for shop drawings, product data, samples, tests, & inspections.

1.3 RELATED SECTIONS

A. Section 01 32 00 - Construction Progress Documentation.

B. Section 01 45 00 - Quality Control: Test and inspection reports.

C. Section 01 77 00 - Contract Closeout Procedures: Submittals for occupancy and Final Payment.

D. Section 01 78 30 - Operation and Maintenance Data: Requirements for preparation and submission of operation and maintenance data.

1.4 SUBMITTALS

A. Submittals Schedule.
   a. Contractor shall prepare and submit an Initial Submittals Schedule for review and approval by University's Representative and Architect, concurrently with the Initial Construction Schedule within **15 Days** of the start date as established in the Notice to Proceed.
   b. This Submittals Schedule will then be used to track the status of each submittal throughout construction and shall be reviewed and updated at each Construction Progress Meeting.
   c. The Submittals Schedule shall be fully coordinated and in agreement with the Construction Schedule and Schedule of Values.
   d. See the format and content requirements for the Submittals Schedule in this Section below.

1.4 DEFINITIONS

A. Submittals, Shop Drawings, Product Data and Samples: Instruments prepared and submitted by Contractor, for Contractor's benefit, to communicate to University and Architect the Contractor's understanding of the design intent, for review and comment on the conformance of the submitted information to the Contract Documents. Submittals are not Contract Documents and do not become Contract Documents by virtue of their submission, review, or stamping by the Architect or University.

B. Shop Drawings: Drawings, diagrams, schedules and illustrations, with related notes and calculations, code review, prepared for the Work of the Contract, to illustrate a portion of the Work.

C. Product Data: Standard published information 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 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 in all Specifications. See also Article 5 of the Contract General Conditions for additional requirements especially those regarding requests for alternatives, equals, and substitutions.

B. 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, including necessary time for reviews by Architect and University as well as any necessary revisions and resubmittal review periods. Some submittals may also require review by Authorities Having Jurisdiction. See procedures for such Deferred Submittals, where applicable.

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 University will return without action submittals requiring coordination with other submittals until related submittals are coordinated.

C. Submittals Schedule: Submittals Schedule shall be formatted in electronic Microsoft Excel as suitable for the specific Project. The format and content shall be subject to acceptance by University, or where provided, Contractor shall utilize the form template provided directly by the University. The Submittals Schedule shall include, at a minimum, the following information:
   1. Specification Section Number that the item is most closely related to.
   2. A space for final sequential Submittal Number
   3. Name of the submittal
   4. Whether the Submittal is for Review or for Information
   5. Indication of the Type of Submittal, with additional description as applicable:
      a. Shop Drawings & Calculations
      b. Product Data
      c. Samples
      d. Color Samples
      e. Mock Ups
      f. Test Reports
      g. Information or Coordination Item
      h. Installation Instructions
      i. Operation and Maintenance Manuals
      j. Warranties and/or Guarantees
      k. Laboratory Reports
      l. Other Submittals
   6. Scheduled date for first submittal, followed by a space for recording the actual

date the submittal was transmitted.

7. Scheduled date for resubmittals, followed by a space for recording the actual date the resubmittal was transmitted.
8. Scheduled date when Architect & University's final release or approval is necessary to be returned to the Contractor in order to not cause delay to the Work.
9. Scheduled date by which material or equipment must be on site in order to not cause delay to the Work.
10. Identify items which are potentially critical path or long lead items for ordering.
11. Identify other items or submittals which require specific coordination.

D. Submission of Submittals:

1. General: Submittals shall be issued from the General Contractor to the University Project Representative in electronic format by email, as an attached PDF file. Wherever possible, the submittal will be bound into a single PDF file, with the transmittal cover letter as the first page, followed by the remaining contents. The file name for the submittal shall be as specified below. Where necessary, an additional physical submittal may be necessary, and shall be submitted as noted below.
    a. File name examples:
        i. ProjectName_074113_MetalRoofPanels_ProductData.pdf
            1. Initial submittal for Metal Roof Panel product data.
        ii. ProjectName_074113-Rev1_MetalRoofPanels_ProductData.pdf
            1. First revised submittal for Metal Roof Panel product data.

2. Physical submittals: Where the content or type of submittal includes one or more items of distinct material quality, submit a physical submittal in addition to the electronic transmittal. This may include, for example, paint draw-down samples, physical roofing samples, or professionally printed product data which includes color card samples or other unique elements.
    a. Where a physical submittal is provided, it shall be suitably packaged and delivered to the University's designated location, including all necessary shipping and handling.
    b. Physical submittals must also be accompanied by an email with an electronic copy of the submittal transmittal and either a scan or photograph of the physical object that was submitted.

3. Transmittal: Utilize the University's approved submittal transmittal template, when provided. The contents of the transmittal shall include:
    a. Project Name and University's Project Number
    b. Name of Architect, Contractor, and University Representative
    c. Specification Section Number and Name
    d. Revision Identifier, eg. "Rev1"
    e. Applicable Drawing and Detail references, where appropriate
    f. Title, Type, and Description of Submittal
    g. Submission Date
    h. Date Requested for Review Response
    i. Name of Contractor or Subcontractor applicable to the submittal contents
    j. Name of Vendor or Supplier
    k. List if the specific contents of the submittal package
    l. Contractor's statement of review and conformance with the Contract Documents prior to submitting to the University. See below for additional related requirements.
    m. Clear indication of any submittal item which may include a deviation from the Contract Documents.

n. Space for Review Markings by University and Architect.
o. Additional items may be required on the Transmittal by the University, to be clarified at the Preconstruction Meeting and in the review process of the initial submittals.

4. Distribution of Submittals: The University Representative will forward Submittals to the project Architect and will manage and be included in all communications among Contractor and Architect, where necessary. The University will issue all official submittal responses back to the Contractor.

E. Submittal Processing Time: Make submittals sufficiently in advance of construction activities to allow shipping, handling and review by the University, 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 resubmittals. Allow not less than 15 days for University's initial review and 10 days for each resubmittal review. See Contract General Conditions and Supplementary General Conditions for additional requirements. No extension of Contract Time will be authorized because of failure to transmit complete and accurate submittals to the Architect sufficiently in advance of the Work to permit processing.

F. Grouping of Submittals: Unless otherwise specifically permitted by the University, make all submittals in groups containing all associated items. The University may reject partial submittals as incomplete or hold them until related submittals are made.

G. Unsolicited Submittals: Unsolicited submittals may be returned unreviewed.

1.6 CONTRACTOR'S REVIEW OF SUBMITTALS

A. Contractor's Review of Submittals: Prior to submission to University for review, Contractor shall review each submittal for completeness and conformance to specified requirements. Contractor shall mark statement of review and provide name and title of Contractor's authorized representative for making such statement. Submittals without Contractor's Statement of Review may be rejected, however, per the Contract General Conditions, by transmitting submittals to the University, the Contractor is making such representation. Therefore, the absence of the Contractor's explicit statement of review shall not relieve the Contractor's responsibilities in any way. Contractor's review shall include:

1. All applicable field measurements and dimensions of new work have been verified.
2. Conformance with requirements of the Contract Documents is confirmed.
3. Exact part numbers and similar data are correct.
4. Work being performed by various subcontractors and trades is coordinated.
5. Field construction criteria have been verified and coordinated with the work being performed by others for University and all actual site conditions.
6. All proposed 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. The Contractor must review the General Conditions for requirements related to contract deviations. Where applicable, submit a Substitution Request in accordance with the requirements specified in Section 01 63 00 Product Substitution Procedures, or submit a Request for Information.

1.7 REVIEW OF SUBMITTALS BY UNIVERSITY AND ARCHITECT

A. Review of Submittals by University and Architect: Submittals shall be a communication aid between Contractor, University, 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 information or similar purposes, where action and return is required or requested, the University and Architect will review each submittal, mark to indicate action taken. Responses are to be made within a reasonable timeframe, based on the requirements listed in the Contract Documents as well as the approved Submittals Schedule.

3. Review actions by University, Architect, and Architect's consultants shall not relieve the Contractor from compliance with requirements of the Contract Drawings, Specifications, or from any violation of local, County, State, or Federal laws, rules, codes, ordinances, or rules and regulations of commissions, boards, or other authorities or public utilities having jurisdiction.

B. Review Action: University and Architect will mark each submittal with a uniform, self-explanatory action stamp, sign, and date. Signatures shall be legible or bear the printed name of the signatory. The action shall be marked as follows:

1. "**APPROVED**" -- the Architect takes no specific exception to the information contained in the Submittal; the Contractor may proceed with that portion of the Work described in the Submittal -- subject to compliance with all applicable requirements of the Contract Documents.

2. "**APPROVED AS NOTED**" -- the Architect approves the Submittal for general design conformance with the specific exceptions noted; the Contractor may proceed with that portion of the Work provided that the notations made by the Architect are incorporated in the work -- and subject to compliance with all applicable requirements of the Contract Documents.

3. "**REVISE AND RESUBMIT**" -- the Architect has noted nonconforming work on the submittal, and/or desires clarification on some aspects of the submittal; the Contractor must make revisions and resubmit. The Contractor may not proceed with the work described in the Submittal.

4. "**REJECTED**" -- the Architect believes the Submittal contains significant error or nonconformance; a new submittal is required. The Contractor may not proceed with the work described in the Submittal.

5. "**ACTION NOT REQUIRED**" or "**NOT REVIEWED**" – the Architect believes the Submittal is not required or does not meet the prerequisites for review.

    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. 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.

1.8 PRODUCT DATA SUBMITTALS

A. Product Data: Cut sheets, 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:
   a. Manufacturer's printed recommendations,
   b. Compliance with recognized trade association standards,
   c. Compliance with recognized testing agency standards,
   d. Application of testing agency labels and seals,
   e. Notation of dimensions verified by field measurement,
   f. Notation of coordination requirements.

4. Do not submit product data until Contractor determines that it is in compliance with requirements of the Contract Documents.

5. Proceed with installation only using reviewed and approved product data. Do not permit use of unmarked copies of product data in connection with construction. Maintain a copy of all approved submittals at the construction site for review by University representatives, Architect, or Authorities Having Jurisdiction at any time during the performance of the Work.

1.9 SHOP DRAWING 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

B. Coordination: Show all field dimensions and relationships to adjacent or critical features of Work.

C. Preparation of Shop Drawings: Shop Drawings include specially-prepared technical data for this Project, including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form for general application to a range of similar projects. Shop Drawings shall be prepared by the Contractor or through the Contractor by way of a subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate a portion of the work.

1. 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. However, if requested in writing background drawings may be provided to the Contractor for use in the Shop Drawings based on the Architect's explicit approval.

2. Where Calculations are required for the preparation of Shop Drawings, they shall be prepared by a qualified registered California professional engineer who shall sign and stamp the Submittal prior to submission to the University. Indicate all formula and criteria used in the preparation of the calculations. The University and Architect shall both not be responsible for checking the accuracy of the calculations. In addition to the regular identification information required for all submittals, include the name, address, license number, stamp and signature of the engineer.
   Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings.

3. Shop Drawings include specially-prepared technical data for this Project, including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form for general application to a range of similar projects. Shop Drawings shall be prepared by the Contractor or through the Contractor by way of a subcontractor, manufacturer, supplier, distributor, or other lower tier contractor, to illustrate a portion of the work.

4. Review of shop drawings or coordination drawings by the University and Architect is only for verification that Contractor has performed coordination Work as specified herein. Review by the University does not relieve the Contractor of compliance with all requirements of the Contract Documents

5. Include the following information:

   a) Include plans, sections, and details complete with information for making connections with other work and any other information necessary to adequately describe the unit of Work.
   b) Identify materials, products, and finishes and, where applicable, use specification section numbers as reference.
   c) Identify details by reference to drawing and detail, schedule, or room numbers.
   d) Identify applicable standards.
   e) Notation of coordination requirements
   f) Detailed Dimensions
   g) Notation of dimensions that have been established by field measurement
   h) Identify proposed deviations from the Contract Documents by clouding and the words "**PROPOSED CONTRACT DEVIATION**" in boldface type or lettering.
   i) Shop Drawings shall be not less than 8-1/2 by 11 inches nor more than 24 by 36 inches, unless approved in advance by the University.
   j) Where coordination requirements necessitate scope of Shop Drawing to include more than one item, label Shop Drawing with specification section number of dominant trade involved. "Dominant" shall be defined as greatest quantity, greatest cost, or principal detail subject of drawing, whichever may be appropriate.
   k) Draw Shop Drawings at large scale, fully detailed and with all materials and stock or purchased components fully identified.
   l) Identify all equipment, locations, and materials using the same tag numbers, names, and technical terms as are used in the Contract Documents.
   m) 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.
   n) Do not use Shop Drawings without an appropriate final review stamp indicating action taken

in connection with construction.

1.10 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:
   a) Generic description of the Sample
   b) Sample source
   c) Product name or name of manufacturer
   d) Compliance with recognized standards
   e) 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. 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.

C. Quantity: Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit three sets. One sample will be returned marked with the action taken.

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 necessary.

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: University and Architect will review and select colors for Project only after all color samples are received, so that colors may be properly coordinated.

E. Mockups and Field Samples:
   a. Mock-ups and Field Samples specified in technical Specifications Sections, and as shown in the Contract Drawings, are a special type of Sample. Comply with requirements for "samples" to greatest extent possible, and process transmittal forms to provide a record of activity.
   b. Erect at site in locations acceptable to the Architect and the University.
   c. Construct each Mock-Up or Field Sample; include all items required in the finish work.
   d. Mockups or Field Samples shall remain in place until the work it represents has been completed and accepted by the Architect and the University.
   e. Note and preserve the notation of the area constituting the sample installation; remove the notation during the final clean up of the Project.

1.11 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 ICC 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.
4. 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.

1.12 CERTIFICATES OF COMPLIANCE

1. Certificates shall certify compliance with published specifications of trade, industry, or governmental organizations or with the specifications of the Architect and shall attest to the Contractor's compliance with such specifications.
2. Where these specifications set standards by referencing published specifications, submittal of certification may not be required; however, if inspection or performance at the job site after delivery and until the Trustees' final acceptance creates doubt regarding compliance, the Architect and the Trustees reserve the right to receive such certification or, in event compliance cannot be certified, demand removal of questionable Work and its replacement with certifiable Work.
3. When required by the Specifications, submit manufacturers' certificate to the Architect for review.
4. Where feasible, or where required by the Specifications, indicate compliance with the specified standard by means of a label on the container, or in an inconspicuous place on the product.
5. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference date, affidavits and certifications as appropriate.
6. Certificates may be recent or previous test results on material or product, but must be acceptable to the Architect.
7. Each certificate shall bear the notarized signature of an official authorized to certify on behalf of the Contractor, supplier or manufacturer and shall contain the legibly printed name and title of the signatory, the name and address of the Contractor, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Certification shall not be construed as relieving the Contractor from furnishing materials and products conforming to the Contract Documents. One certificate bearing the original signature and notary stamp, accompanied by good quality copies to achieve the required total quantity is acceptable.

1.6 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 01 45 00 - Quality Control & Inspections for additional requirements.

1.7 OPERATION AND MAINTENANCE DATA SUBMITTALS

A. Refer to requirements specified in Section 01 78 30 - Operation and Maintenance Data. Include operation and maintenance data submittals in Submittals Schedule.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 35 00: ENVIRONMENTAL 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

1. Environmental Protection Plan
2. Dust and Air Pollution Control

1.3 RELATED SECTIONS

A. Section 01 35 10 – Hazardous Materials Procedures
B. Section 01 41 00 – Regulatory Requirements
C. Section 01 52 00 – Construction Area and Temporary Facilities
D. Section 01 74 00 – Cleaning Requirements
E. Section 01 74 19 – Waste Management and Recycling

1.4 SUBMITTALS

A. Environmental Protection Plan: Develop and submit an Environmental Protection Plan for the University's review and comment. Incorporate all corrections until a final Plan is approved.
   a. Due within **15 Days** of the Notice to Proceed. Make any required modifications and file the final approved submittal for the project records. Post in a conspicuous location on the Project Site and maintain a copy in the Contractor's Field Office. Post approved signage in the relevant locations in the Construction Area.
   b. See below for specific content and requirements.
   c. Environmental Protection Plan includes both a type written report as well as coordination drawings that must follow the general requirements for Shop Drawings as per Section 01 33 00 Submittal Procedures.
   d. During the course of construction, submit any proposed revisions for acceptance prior to implementing any changes to the Environmental Protection Plan.
   e. Coordinate the Environmental Protection Plan with the requirements of other Sections, Drawings, and the Contract General Conditions.

1.5 ENVIRONMENTAL PROTECTION PROCEDURES, GENERAL

A. 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.

B. Requirements specified in this Section are in addition to those of Article 35.03 of the Contract General Conditions and as required by all applicable codes, ordinances, statutes and regulations. During 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. Coordinate with all other relevant Sections.

C. Hazardous Materials: See Section 01 35 10 – Hazardous Materials Procedures.

1.6 ENVIRONMENTAL PROTECTION PLAN

A. Environmental Protection Plan shall include, both written information as well as coordination drawings and figures. Include, at a minimum, the following elements, as applicable:

1. Air Pollution Control and Indoor Air Quality:
    a. Include outline format of project-specific air pollution and control and indoor air quality rules, regulations, ordinances, and statutes as applicable to the types of Work being performed as per the Contractor's means and methods. Indicate any special aspects of the project which may be of concern and describe measures taken to resolve potential conflicts.

1.7 GENERAL PROTECTION OF ENVIRONMENTAL RESOURCES

A. 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.

B. Trees and Landscape Protection: See section 01 52 00 Construction Area and Temporary Facilities for required protection of existing trees and landscaping.

C. Water resources: Comply with all applicable Federal, State and local Codes, ordinances, statutes and regulations pertaining to discharge of pollutants to underground and natural waters.

D. Oil 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.

1.8 SMOKE AND ODOR CONTROL PROCEDURES

A. Smoke and Odor Control: Protect all fresh air intakes to existing buildings from exhaust from internal combustion engines, paint and solvent fumes and other noxious fumes and vapors.

B. If fume-generating procedures must occur within 50 feet of an air intake, Contractor shall:
    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 windy days).
    c. Provide carbon filter media, plastic barriers, or other control methods to ensure fresh air only enters into the building ventilation system.

1.9 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 35.03 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.

1. Unpaved areas shall be wetted down, to eliminate dust formation, a minimum of twice a day.
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.
9. Refer to Section 01 74 00 - Cleaning Requirements.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION

3.1 GENERAL

A. Implement the Environmental Protection Plan including the Air Pollution Control Plan as specified above.

B. Notify University of any discrepancy or issue which may require specific attention.

C. Contractor's failure to comply with the requirements of this section shall be considered a loss to the University and shall be compensated appropriately. Should any regulatory fines or penalties be levied as the result of the Contractor's deficient performance, such fines or penalties shall be the responsibility of the Contractor at no cost to the University.

END OF SECTION

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SECTION 01 35 10: 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 procedures

1.3 IDENTIFIED HAZARDOUS MATERIALS

A. Identified Hazardous Materials:

1. Refer to Contract Special Conditions for reference to any hazardous materials survey reports and specifications for abatement. Comply with all requirements therein.

2. Contractor shall exercise caution as required by the Contract General Conditions Article 35.08f.
   a. Comply with California Code of Regulations, Title 8, Sections 1529, 1532.1 and 5208.

3. Architect/Engineer assumes no responsibility relating to existence of any identified hazardous materials, or liability for performance of the Work.

1.4 UNIDENTIFIED HAZARDOUS MATERIALS

A. Unidentified Hazardous Materials:

1. Except as otherwise specified, in the event that Contractor encounters on the project site material believed to be potentially containing 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 in writing as a Request for Interpretation (RFI).

2. 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.

3. 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 in a manner specified by the State of California Hazardous Substances Control Law (Health and Safety Code Division 20, Chapter 6.5).

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 35 50: SAFETY 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 01 35 10 - Hazardous Material Procedures: Protection from asbestos containing materials (ACM), polychlorinated biphenyl (PCB), or other hazardous materials.

B. Section 01 52 00 – Construction Area and Temporary Facilities.

C. Contract General Conditions – Article 35.08d.

1.4 SUBMITTALS

A. Accident Reports: A copy of each accident report, which the Contractor or subcontractors submit to their insurance carriers, shall be forwarded to the Architect and to the University Representative as soon as possible, but in no event later than 5 calendar days after the day the accident occurred.

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 written release

of the stop work order will be issued as soon as possible.

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. Such measures shall not be prescribed by the University or Architect, but shall be the responsibility solely of the Contractor.

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 University's employees unless specifically permitted by the Contract or subsequent written agreements are made with adequate steps taken for the protection of the public and the University'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 any 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 01 41 00: 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 RELATED DOCUMENTS

A. Contract General Conditions
   a. See Article 35.11, and see below in this Section for detailed responsibilities for certain permit fees.
B. Special Conditions
C. Section 01 45 00 - Quality Control

1.3 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 Project Manual.

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 not in violation of any codes, ordinances, or standards.

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.

1.2 APPLICABLE CODES, LAWS AND ORDINANCES

A. Applicable Codes, Laws and Ordinances:

1. Performance of the Work shall meet or exceed the minimum requirements of California Code of Regulations (CCR), Title 24, including all effective Supplements and Errata and all codes and standards.

2. In accordance with Education Code Section 66606, the Trustees of the California State University shall serve as the Building Official for this project, and the Humboldt State University Campus Deputy Building Official shall be the authority having jurisdiction.

2. State Fire Marshal: Performance of the Work shall also comply with applicable requirements of California Code of Regulations (CCR) Title 19 - Public Safety, per the Authority of the Office of the State Fire Marshal (SFM).
    a. The University shall be responsible for obtaining plan check approval and for permit and inspection fees collected by the SFM. This shall include the permit fees for the deferred submittal reviews, for fire sprinkler and fire alarm systems, where applicable.
    b. If the Work is not installed in accordance with the SFM's requirements, such that specific deficiencies in the Work, after the first SFM inspection, are still not corrected to the satisfaction of the SFM after a second inspection, the Contractor shall be responsible for the SFM costs for the third and all subsequent inspections for that item or area of the Work.
    c. If the Contractor proposes an alternate means of accomplishing the design intent of the Contract Documents, such that additional plan approval fees would be required by the SFM, then the Contractor shall be responsible for securing any and all associated required approvals at no cost to the University.

3. Division of the State Architect, Accessibility: The Work shall comply with the most restrictive provisions of the Americans with Disabilities Act (ADA) and CA CBC Chapter 11B, per the Authority of the CA Division of the State Architect (DSA).
    a. The University shall be responsible for the procedural process of obtaining plan check approval and for permit and inspection fees collected by the DSA, where required.
    b. If the Work is not installed in accordance with the DSA's requirements, such that specific deficiencies in the Work, after the first inspection, are still not corrected to the satisfaction of the accessibility inspector after a second inspection, the Contractor shall be responsible for the accessibility inspector's costs for the third and all subsequent inspections for that item or area of the Work.
    c. If the Contractor proposes an alternate means of accomplishing the design intent of the Contract Documents, such that additional plan approval fees would be required by the DSA, then the Contractor shall be responsible for securing any and all associated required approvals at no cost to the University.

4. Stormwater Permit: The following items are a more specific review of the applicable regulations and amends the requirements listed under Article 35.03b of the Contract General Conditions.
    a. The Contractor is not required to develop or implement a Storm Water Pollution Prevention Plan (SWPPP) under the California General Permit for as the proposed construction activity results in land disturbance of less than one acre and is therefore except from that specific requirement.
    b. The project is exempt from requirements of the SWQCB Phase II Small MS4 General Permit Order No. 2013-0001-DWQ.

5. Air Quality Permit: Where required in accordance with Section 01 35 10 Hazardous Materials Procedures, or elsewhere in the Contract Documents, the Contractor is responsible for obtaining a permit from the North Coast Unified Air Quality Management District (NCUAQMD) for notification and asbestos abatement in accordance with NESHAP. Submit permit to

University Project Manager for approval prior to start of 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, and special district agencies and jurisdictions, where having authority.

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.

5. 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.

5. Unless otherwise specified, specific references to codes, regulations, standards, manufacturers' instructions, or requirements of regulatory agencies, when used to specify requirements for materials or design elements, shall mean the edition of each in effect as identified in the Contract Documents. If no particular edition is identified, the edition in effect on the publication date of the Bid Package shall govern.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

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SECTION 01 42 00: REFERENCE STANDARDS AND DEFINITIONS

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 01 41 00 - 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. Relationship to Drawings and Specifications: Such references are incorporated into and made a part of the Drawings and Specifications to the extent applicable.

C. 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.

D. Copies of Reference Standards:

   1. Reference standards are not furnished with the Drawings and Specifications. The Contractor, subcontractors, manufacturers, suppliers, trades and crafts shall be familiar with these generally-recognized standards of the construction industry. Copies of reference standards must be obtained from publishing sources.

E. Jobsite Copies:
1. Contractor shall obtain and maintain at the Project site copies of all relevant reference standards identified on the Drawings and Specifications in order to properly execute the Work.

2. In addition to the complete current Contract Documents, Drawings, Specifications, Submittals, RFI's, and other Project Documents that shall absolutely be readily available at the site, the Contractor shall determine which of the following should be readily available at the site, as applicable to the Work. Where specific issues arise that a reference document is necessary for the resolution of an issue, the Contractor shall make such available as early as possible without causing delay to the progress of the Work:
   a. State Building Codes: As referenced in Section 01 41 00 - 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) Underwriters Laboratories, Inc. (UL) Building Products Listing.
      2) Factory Mutual Research Organization (FM) Approval Guide.
      3) American Society for Testing and Materials (ASTM) Standards in Building Codes.
      4) American National Standards Institute (ANSI) standards.
   d. Fire and Life Safety Standards: All related referenced standards.
   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.
   f. Research Reports: ICC Evaluation Service, Inc. (ICC-ES). Reports (NER), for products not in conformance to prescribed requirements of the California Building Code (CBC).
   g. Product Listings: Approval documentation, indicating approval of authorities having jurisdiction for use of product within the applicable jurisdiction.

F. Edition Date of References:
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 Invitation for Bid. All amendments, changes, errata and supplements as of the effective date shall be included.

G. 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", 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" or “Supply:” 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 and shall have the same meaning as “indicated.” 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:" Refers to the 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.

10. "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.

11. Owner: synonymous with “Trustees” per Contract General Conditions section 1.00. Also synonymous with “Campus,” “CSU,” “HSU,” “Humboldt State University,” and “University.”

12. "Per:" Same as "in accordance with," "according to" or "in compliance with."

13. "Products:" Material, system or equipment.

14. "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.

15. "Provide:" Means "furnish and install, complete and ready for the intended use."

16. "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.

17. "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.

18. "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.

19. "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.

20. “Substitution:” A product that is of lesser or greater quality or performance than the specified material or equipment

21. "Testing Laboratory or Agency:" 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 01 45 80 - Testing Laboratory Services.

1.6 ABBREVIATIONS, ACRONYMS, NAMES AND TERMS, GENERAL

A. Abbreviations, Acronyms, Names and Terms: Where acronyms, abbreviations, names and terms are used in the 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 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." or Dictionary of Architecture and Construction, Fourth Edition (Cyril M. Harris, McGraw-Hill).

PART 2 – PRODUCTS (Not Used)
PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01 45 00: QUALITY CONTROL & INSPECTIONS

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 01 31 00 – Project Coordination: Coordination of Work under Contract.

B. Section 01 41 00 - Regulatory Requirements: Applicable codes, ordinances and standards.

C. Section 01 45 80 - Testing Laboratory Services: Selection of independent testing and inspection laboratory; tests and inspections conducted by testing laboratory.

D. Section 01 61 00 - Basic Product Requirements: Product options, substitutions, transportation and handling requirements, storage and protection requirements, and system completeness requirements.

1.4 REQUIRED SUBMITTALS

A. Inspection List Submittal – Submit list of required inspections as applicable to the Work and in sequence that will be required based on the Contractor's Construction Schedule. See below for additional requirements.
   a. This is an "initial" submittal and is due within **15 Days** of the start date established in the Notice to Proceed as per Section 01 33 00 Submittal Procedures. Make any corrections necessary and review the approved Inspection List at each Construction Progress Meeting.

B. Inspection and Test Reports – Submit all inspection and test reports to the University within **3 Days** of Contractor's receipt from the inspector or testing agencies.

REGULATORY REQUIREMENTS FOR TESTING AND INSPECTION

A. Comply with requirements for testing and inspections and correction of deficiencies as interpreted by authorities having jurisdiction. It shall be the responsibility of the Contractor to request, schedule, and coordinate all necessary inspections.

1.5 CONTRACTOR'S QUALITY CONTROL

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

C. 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, 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 or 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: Prior to implementing any proposed deviation, 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.

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. Cooperate by making Work available for inspections and observations by University's Representative, Architect and their consultants.

2. Provide access to all parts of the Work, including plants or shops where materials or equipment are manufactured or fabricated.

3. 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.

4. 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.

1.7 INSPECTIONS AND TESTS BY AUTHORITIES HAVING JURISDICTION

A. Contractor shall cause all tests and inspections required by authorities having jurisdiction to be made for Work under this Contract. Contractor shall email University Inspector for inspection request not later than 12:00 PM one full business day in advance for all inspections. Some inspections may require much longer notice. Accommodate such in advance and coordinate with the Inspections List Submittal.

1. Except as specifically noted, scheduling, coordinating and conducting such inspections and tests shall be solely the Contractor's responsibility, and the University’s Representative shall be included in all written, verbal, and on-site communications with all inspectors.

2. All time required for inspections and tests required by the University or 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, except as specified in Section 01 40 00 Regulatory Requirements for subsequent fees after failed inspections.

A. General: All construction work shall be subject to inspection by the University, and other authorities

having jurisdiction. All such construction or work shall remain accessible and exposed for inspection purposes until approved by the associated Inspector.

1. 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 ordinance. Inspections presuming to give authority to violate or cancel the provisions of code, or requirements of the Contract Documents, shall not be valid.

B. Contractor shall confirm that the Work is entirely complete and ready for inspection at least one hour prior to the time requested for the inspection and shall notify the Inspector.

C. Approval Required: Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the Inspector or inspecting authority. The Inspector, upon notification, shall make the requested inspections and shall either indicate that the work complies with requirements or does not comply with requirements. The Contractor shall correct any portions that do not comply and such portion shall not be covered or concealed until re-inspected and approved

1. There will be a comprehensive inspection prior to Acceptance by the University; and also prior to occupancy by the University if occupancy is prior to Acceptance.

D. Inspection Coordination: Contractor shall describe anticipated requests when presenting the look-ahead schedule at progress meetings. 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.

1.8 INSPECTIONS LIST SUBMITTAL

A. Inspection List Submittal: Contractor shall review the Contract Documents and prepare a comprehensive list of all required tests and inspections; the list shall be submitted to the University for review and comment. The Inspection List will be reviewed at each Construction Progress meeting. Required inspections include but are not limited to:

1. Inspections required by California Building Code Section 110.
2. Inspections required by the State Fire Marshal.
3. 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.
4. Mechanical and Electrical Rough-In Inspection: To be made after all mechanical and electrical rough-in work is completed.
5. 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.
6. Backfill & Compaction Inspection: to be made as work progresses.
7. Concrete Compression Testing: as work progresses.
8. Pressure Testing of Mechanical Equipment and Piping.
9. Fire Alarm and Life Safety Systems.
10. Final Inspection: When building is completed and ready for occupancy.
11. Other Inspections:
    a. As required by the University to ascertain compliance with the provisions

of the Contract Documents and approved Submittals.

b. 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.

1.9 TEST AND INSPECTION REPORT SUBMITTALS

A. Inspectors and testing agencies shall submit a written report of each inspection, test or similar service, to the University, the Contractor, the Architect, and others as requested or required by the Contract Documents.

B. Test and Inspection Reports shall be provided on forms approved by the University. Written reports of each inspection, test or similar service shall include:

1. Number and name of inspection or test, identical to request
2. Date of report
3. University' Project name and number,
4. Printed name and contact information for inspection or testing agency
5. Dates, locations, and ambient conditions of samples and tests or inspections
6. Designation of the inspection or test method,
7. Identification of the requirement to be satisfied by the inspection or test
8. Complete inspection or test data,
9. Test results and an interpretation of test results,
10. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements,
11. Description of any aspects of the work out of compliance;
12. Clear indication of whether the results are entirely satisfactory and whether retesting or re-inspection is required.
13. Printed name and signature of individual performing the inspection or test

1.10 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.

2. Except as specifically noted, all costs for inspections and tests by serving utilities shall be included in the Contract Sum.

1.11 INSPECTIONS AND TESTS BY MANUFACTURER'S REPRESENTATIVES

A. Inspections and Tests by Manufacturer's Representatives: Contractor shall cause all required 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.

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

1.12 INSPECTIONS BY INDEPENDENT TESTING AND INSPECTION AGENCY

A. Inspections by independent Testing Laboratory: Refer to Section 01 45 80 - Testing Laboratory Services.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION

SECTION 01 45 80: TESTING LAB 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 testing laboratory services.

1.3 RELATED SECTIONS

A. Section 01 41 00 – Regulatory Requirements for

B. Section 01 45 00 - Quality Control and Inspections: General requirements for inspections and tests.

C. Individual Product Specifications Sections: Specific requirements for inspections and tests.

1.4 RESPONSIBILITIES

A. Testing Laboratory: University will engage and pay for the services of an independent agency to perform inspections and tests specified as the University' responsibility.
   1. Where the University has 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 University, unless otherwise agreed in writing with the University.

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.

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.

E. Payment for Testing Laboratory Services:
   1. Unless otherwise specified, University 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 University. 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. Such costs, if determined by University's Representative to be attributable to the Contractor under this provision, shall be deducted by Change Order.

4. 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.

5. 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 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 after review and acceptance of submitted mix design.
    f. Multiple off-site fabrication sites.
    g. Fabrication and installation errors.
    h. Inefficient or poorly organized fabrication 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.

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, or 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.
    2. 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 University and the Architect and all such construction or work shall remain accessible and exposed for inspection purposes until approved by the University.

1. The University will provide project personnel, including inspectors, at the project site.
2. 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.
3. 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 University 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 such work is ready for inspection. The University require that such work is ready for inspection. The University require that every request for inspection be filed at least two working days–before such inspection is desired. Such requests shall be in writing.

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.

1. The Contractor shall be responsible for reviewing all of the Contract Documents for any additional inspection requirements.

1.6 SUBMITTALS

A. Reports: University' independent testing agency shall submit a certified written report of each inspection, test or similar service, to the University. Comply with the general requirements for submittals as per Section 01 33 00 Submittals Procedures.

B. Report Data: Written reports of each inspection, test or similar shall include, but not be limited to:

a. Date of issue
b. Project title and number.
c. Name, address and telephone number of testing agency
d. Dates and locations of samples and tests or inspections
e. Names of individuals making the inspection or test
f. Designation of the Work and test method
g. Identification of product and Specification Section
h. Complete inspection or test data
i. Test results and an interpretation of test results
j. Ambient conditions at the time of sample-taking and testing
k. Comments or professional opinion as to whether inspected or tested
l. Work complies with Contract Document requirements
m. Name and signature of laboratory inspector
n. 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.

1. Integrate Testing and Inspection Schedule with Construction Progress Schedule specified in Section 01 32 00- Construction Progress Schedules and indicate in the Inspections List submittal in Section 01 45 00 – Quality Control and Inspections.

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.

3. 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 01 45 00 - Quality Control and Inspections and individual product Specifications Sections for requirements regarding tests and inspections by product manufacturers and others, including serving utilities and for requirements regarding observations and inspections by University's Representative, Architect and Project Inspector.

PART 2 – PRODUCTS (Not used)

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

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SECTION 01 51 00: 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 service.

B. Removal of temporary utilities.

1.3 RELATED SECTIONS

A. Contract General Conditions
B. Supplementary Conditions and Special Conditions
C. Section 01 35 50 – Safety Procedures
D. Section 01 41 00 – Regulatory Requirements
E. Section 01 52 00 – Construction Area and Temporary Facilities

1.4 SUBMITTALS

A. Temporary Utilities Site Plan: Where any are to be provided, show all temporary utility hook-up locations on an approved site plan background drawing that is to scale, neat, and legible.
   a. Due within **15 Days** of the Notice to Proceed. Make any required modifications and file the final approved submittal for the project records. During the course of construction, submit any proposed revisions for approval prior to implementing any changes.

B. Temporary Utilities Reports: Submit reports of tests, inspections, applicable meter readings (monthly) and similar procedures performed on temporary utilities.

1.5 TEMPORARY UTILITIES AND SERVICES

A. Temporary Utilities and Services, General: Although it is expected that the existing building electrical power will be available for the Contractor's use, if any other utilities are needed, all such temporary utilities and other services necessary for proper performance of the Work shall be provided and paid for by Contractor, unless specifically noted otherwise. Refer to Contract General Conditions 35.11. Temporary utilities and services shall conform to all applicable regulatory requirements of authorities having jurisdiction and serving utility companies and agencies. Where temporary utilities require the services of a registered design professional, those shall be provided by the Contractor. The Architect and their consultants are not responsible for temporary utilities.

B. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits, including permits for temporary generators, from authorities having jurisdiction.

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.

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 official 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, COOLING, AND VENTILATION

A. Temporary Heating, Cooling, and Ventilation: Provide and pay for temporary heating, cooling, ventilation, and dehumidification devices, fuel and related service charges to provide ambient temperatures as required to maintain conditions necessary for proper performance of construction activities and to assist cure of materials, removal of moisture, and to prevent accumulation of dust, fumes, vapors, and gases.

B. Use of Permanent Heating, Cooling, and Ventilation Systems: Permanent heating, cooling, and ventilation equipment may not be used during construction. Those permanent systems, including ventilation only systems and all ducting must remain fully covered, sealed, and protected from dust and other potential sources of indoor environmental quality contamination. When the Work is clean and free of dust generating activity, the contractor may remove the covers and make all final connections and begin the start-up, testing, and acceptance process. If after this has been complete, there is to be any further dust generating work, those systems shall be re-covered and sealed prior to such activity.

1.8 TEMPORARY WATER SERVICE

A. Temporary Water Service: Locate and connect to existing water source for temporary construction water service, as acceptable to University's Representative. Extend branch piping to outlets located within the Work Area. Install a meter so the volume of water used during the course of construction may be monitored. Temporary water service piping, valves, fittings and meters shall comply with requirements of the University and applicable regulations.

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.

1.9 TEMPORARY SANITARY FACILITIES

A. Temporary Sanitary Facilities: Provide and maintain adequate temporary sanitary facilities and enclosures for use by construction personnel within the Work area. Comply with regulatory requirements for the type, size, quantity, and location of temporary toilet facilities. 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 in writing. Immediately prior to Contract Completion review, thoroughly clean and sanitize permanent sanitary facilities used during construction.

1.10 TEMPORARY POWER AND LIGHTING

A. Temporary Power: Provide electric service as required for construction operations. Where available and approved, the Contractor may connect to existing campus power service using a method approved by the University and in compliance with all regulatory requirements.
   1. 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), Pacific Gas & Electric, and requirements of authorities having jurisdiction.
   2. As necessary in order to maintain construction progress, Contractor shall provide and pay all costs associated with generators used for temporary power.

A. Temporary Lighting: Provide temporary lighting as necessary for proper performance of construction activities and for adequate illumination for observations, inspections, safety, and security throughout the duration of construction activities.
   1. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required. Maintain lighting and provide routine repairs.

B. 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.

C. 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. Contractor shall maintain lighting and make routine repairs and replacements as necessary.

D. Service Disruptions: Temporary power connections shall not disrupt service to other University operations. Schedule any proposed temporary shut-downs at times convenient to University, which may be outside of normal work hours or days. Submit request not less than 7 Days prior to proposed shut down.

1.11 CONSTRUCTION TELEPHONE SERVICE

A. Construction Telephone Service: Provide telephone service to Contractor's field staff by means of cellular telephones to enable communications between University's Representative, Project Inspector and Contractor as well as for emergency purposes.

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

A. Materials and Equipment: For all temporary utilities, provide materials that are suitable and serviced for the use intended. Their use and methods of installation shall not create unsafe conditions or violate requirements of applicable codes and standards.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITIES INSTALLATION

A. Temporary Utilities Installation, General: Contractor shall engage the University and appropriate local utility company or personnel to install temporary service or connect to existing service. Work on temporary utilities shall not occur until after Temporary Utility Site Plan submittal has been approved. Any proposed changes to the plan must be submitted for approval prior to implementation. Use charges for temporary facilities are the Contractor's responsibility.

B. 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 University requires that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Prior to Completion, clean and renovate permanent facilities that may have been used during the construction period.

B. Clean exposed surfaces and repair damage caused by installation and use of temporary utilities and services. Remove temporary underground utility installations fully. 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 01 73 20 - Cutting and Patching.

END OF SECTION

SECTION 01 52 00: CONSTRUCTION AREA AND TEMPORARY 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. Temporary Construction Area facilities and submittal requirements.

1.3 RELATED SECTIONS

A. Section 01 35 00 – Environmental Protection: For stormwater pollution prevention.
B. Section 01 35 50 – Safety Procedures
C. Section 01 51 00 - Temporary Utilities: Water, power, telephone, and sanitary services.
D. Section 01 55 00 – Vehicular Access and Parking.
E. Section 01 74 00 - Cleaning Requirements: Cleaning during construction and final cleaning.

1.4 SUBMITTALS

A. Construction Area Plan: If any temporary construction facilities are proposed or otherwise necessary for the proper execution of the Work, submit a plan showing all temporary construction facilities on an approved site plan background drawing that is generally to scale, neat, and legible to fit on paper size not larger than 24” x 36”. It may be hand-drawn or use computer graphics. The Contractor may utilize the Construction Area Map Exhibit from the Contract Documents as a starting place.
    1. Due within **15 Days** of the Notice to Proceed. Make any required modifications and file the final approved submittal for the project records. During the course of construction, submit any proposed revisions for acceptance prior to implementing any changes.
    2. The Construction Area Plan shall include, at a minimum, the following elements:
        a. Construction area and staging
        b. Contractor’s field office
        c. Temporary storage sheds
        d. Temporary utilities connections (See section 01 51 00)
        e. Temporary fencing and gates
        f. Temporary barriers and enclosures
        g. Temporary protection of installed Work
        h. Construction aids
        i. Traffic control elements (See section 01 55 00)
        j. Waste and recycling collection areas (See section 01 74 19)
    3. Construction Area Plan is a coordination drawing and must follow the general requirements for Shop Drawings as per Section 01 33 00 Submittal Procedures.

1.5 CONSTRUCTION AREA AND STAGING

A. Refer to the Construction Area Map Exhibit in the Contract Documents for the areas identified by the University as approved for use by the Contractor during the course of construction. Prior to mobilization on-site, the Contractor’s Construction Area Plan submittal must be accepted by the University.
    1. Use only site areas shown on the Construction Area Plan. Do not store materials, equipment, or other elements outside of this area.
    2. The locations of fencing may not necessarily align exactly with the Construction Area, but

fencing shall not be placed outside of that area unless specifically approved for purposes of site safety or security.

3. Limited use of areas outside of the Construction Area for isolated short durations may be coordinated with the University, for approval, where special conditions are warranted. For example, parking a crane for a specific purpose for less than one day to stock trusses may be an acceptable use provided that if the equipment and safety clearances are taking up any existing parking facilities, the parking permit fees must be paid for in full by the Contractor.
    a. Submit complete proposal and justification for activities outside of the Construction Area no less than 10 Days prior to the planned date for such activities to occur. Provide more advance notice where necessary based on the type, complexity, and duration of the activity.
    b. Under no circumstances shall the Contractor be entitled to an increase in Contract Sum or Time in relation to the University's approval or rejection of any such proposals.
    c. Coordinate activities outside of the Construction Area with all other project requirements and regulations as well as emergency services access requirements.
    d. Do not cause disruption to ongoing University operations, and remove items from areas outside of Construction Area immediately after activity is complete.
4. The Construction Area shall be kept clear of trash and debris and in neat order. Materials and equipment shall be placed in an organized fashion.
5. 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 the Contractor's responsibilities to provide and maintain emergency access and egress as required by public safety authorities having jurisdiction and the 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.

1.6 CONTRACTOR'S FIELD OFFICES

A. Contractor's Field Office: If a construction field office is proposed or otherwise necessary for the proper execution of the Work, the Contractor shall provide a mobile field office of weather-tight and secure construction, with lighting, power, ventilation, and heating where necessary and appropriate to conduct the management and coordination of the project and work activities.

1. Provide accommodations for the Contractor's desk workspace, Construction Document layout, and for a meeting table and chairs for not less than six persons.
2. Provide a computer with cellular internet connection and a photocopier, printer, and fax machine in good working order.
3. The University and inspectors may also utilize this field office and the furnishings and equipment listed above during work hours for its purposes related to the Project, but will not occupy this field office full-time.
4. Locate in the position shown in the accepted Construction Area Plan. If an alternate location is proposed, of if the unit is to be moved during the course of construction, simply provide an updated Construction Area Plan indicating the new location.
5. Contractor's Field Office shall present neat, clean, business-like appearance at all times, internally and externally, and shall not be used for living quarters.
6. Include other required elements for safety and fire protection, including UL rated

portable fire extinguisher(s) as determined necessary by the Contractor and the authorities having jurisdiction

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

1.7 TEMPORARY STORAGE SHEDS

A. Provide storage sheds where necessary and appropriate for of weather protection and security of tools, materials, and equipment.
   1. Locate in the position shown in the accepted Construction Area Plan. If an alternate location is proposed, of if the unit is to be moved during the course of construction, simply provide an updated Construction Area Plan indicating the new location.
   2. Do not store combustible or flammable materials near the Contractor's Field Office or the building under construction.
   3. Maintenance: Use all means necessary to maintain construction facilities in proper and safe condition throughout progress of the Work. In the event of loss or damage, promptly restore temporary construction facilities by repair or replacement at no change in the Contract Sum or Contract Time.

1.8 TEMPORARY FENCING AND GATES

A. Provide temporary portable chain-link fencing with windscreen around the Construction Area.
   1. Locate in the position shown in the accepted Construction Area Plan. If an alternate location is proposed, of if the unit is to be moved during the course of construction, simply provide an updated Construction Area Plan indicating the new location.
   2. Provide access gates for personnel, equipment, and vehicles as necessary. Such access points shall be made secure with latches and locks in a manner that is appropriate for both safety and security.
   3. Coordinate with the University for procedures with regard to access rights and restrictions. The Contractor shall ensure no unauthorized persons enter the Construction Area.
   4. Fencing shall be no less than standard 2 inch 11-gauge, galvanized steel, with galvanized pipe posts with caps, at 8 feet high minimum. Post bases shall either be set in temporary concrete footings or use galvanized steel bases located to prevent the risk of tripping.
   5. Windscreen fabric shall be standard fabrication in forest green color to provide visual screening of the Work activities and must be securely fastened on the outside face of the chain link.
   6. Design and construction of fencing is the responsibility solely of the Contractor. The specifications provided here are to establish the minimum requirements only. Do not install any fencing in such a way as to be of safety or security hazard. If during storm events the wind force exceeds the ability of the fence to remain secure, provide immediate measures to remove the windscreen.
   7. Maintenance: Use all means necessary to maintain construction facilities in proper and safe condition throughout progress of the Work. In the event of loss or damage, promptly restore temporary construction facilities by repair or replacement at no change in the Contract Sum or Contract Time.

1.9 TEMPORARY BARRIERS AND ENCLOSURES

A. Provide temporary barriers, guardrails, covered passageways, and enclosures as necessary to

provide for public safety, to prevent unauthorized entry to construction areas and to protect new work, existing facilities and adjacent properties, including existing trees and vegetation from damage from construction operations.

1. Comply with all applicable codes and safety regulations.
2. Locate in the position shown in the accepted Construction Area Plan. If an alternate location is proposed, of if the unit is to be moved during the course of construction, simply provide an updated Construction Area Plan indicating the new location. Where the placement of a barrier or enclosure is a matter of immediate safety, the Contractor shall act immediately and coordinate with the University as early as practical.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes for firefighting.
4. Maintain unobstructed access to adjacent facilities which are occupied and in use by the University during construction.
5. Paint temporary barriers and enclosures or otherwise provide with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Include an acceptable detour route and signage with direction indicators.
6. Where appropriate and necessary, provide warning lighting, including flashing red or amber lights.

B. Passageways: Erect structurally adequate, protective, covered walkways, tunnels, overhangs, or partitions for passage of persons to maintain access and emergency egress for occupied facilities. Such elements may be in both interior and/or exterior locations.

1. Comply with all applicable codes and safety regulations.
2. Locate in the position shown in the accepted Construction Area Plan. If an alternate location is proposed, of if the unit is to be moved during the course of construction, simply provide an updated Construction Area Plan indicating the new location. Where the placement of a barrier or enclosure is a matter of immediate safety, the Contractor shall act immediately and coordinate with the University as early as practical
3. Access to all adjacent buildings, sidewalks, driveways, and drop-off points must remain ADA/Title 24 accessible at all times.
4. Protect all vehicles, pedestrian and vehicular traffic from damage or injury.
5. Design and construction of passageways is the responsibility solely of the Contractor. The specifications provided here are to establish the minimum requirements only. Do not install any passageways or covers in a way that may be a safety or security hazard.
6. Provide proper anchorage to resist all applicable loads.
7. Provide temporary lighting where necessary for maintaining minimum illumination levels for egress. Lighting shall be controlled by photocell or timer if appropriate lighting levels do not require lighting fixtures to be on during daylight hours. See Section 01 51 00 - Temporary Utilities.
8. Provide all requires exit signs and other directional signage.
9. Where necessary, as ultimately determined by the authorities having jurisdiction, and under the Contractor's responsibility to comply with all applicable codes, standards, and regulations, the Contractor shall provide a registered design professional licensed in the State of California to complete the designs for covered passageways and other barriers or enclosures. Where a permit is required, it shall be provided and paid for in full by the Contractor without any increase in Contract Time or Sum.
10. Any temporary covered passageways or barriers shall be neat and professional in appearance. Walls shall be plumb and straight, edges shall be aligned, intersections of materials shall be tight and regular. Raw plywood or other wood materials is acceptable, but it shall be painted a University standard color if they are to be used in place for more than 7 Days unless otherwise coordinated with and approved by the

University.

11. Use all means necessary to maintain construction facilities in proper and safe condition throughout progress of the Work. In the event of loss or damage, promptly restore temporary construction facilities by repair or replacement at no change in the Contract Sum or Contract Time.

C. Exterior Enclosures: Provide temporary weather-tight closure of exterior openings to:
   1. Achieve acceptable working conditions.
   2. Protection of building and materials from weather damage.
   3. Prevent entry of unauthorized persons or vehicles.
   4. Provide access doors with self-closing hardware and locks.

D. Interior Enclosures: Provide temporary partitions and ceilings as required to separate work areas from areas already completed, to prevent penetration of dust and moisture into adjacent areas, to provide security, and to prevent damage to materials and equipment.

E. Protection of Work: Provide for the protection of all installed Work.
   1. Provide protection that is appropriate to the phase and exposure of the work and materials stored on site. Provide storage sheds as specified where necessary.
   2. Provide temporary floor surfacing, subject to the approval of the University, and maintain such surfacing wherever Contractor's personnel are working at finished surfaces to prevent dents, scratches, rust, stains, damage from construction debris. Such areas shall be cleaned daily to the satisfaction of the University, prior to Contractor's cessation of the work each day.

1.10 CONSTRUCTION AIDS

A. Provide all necessary construction aids including, but not limited to debris chutes, temporary stairs, scaffolding, fall protection anchors, and other elements as required for the construction.
   1. Design and construction aids is the responsibility solely of the Contractor. The specifications provided here are to establish the minimum requirements only. Do not install any construction aids in a way that may be a safety or security hazard.
   2. Use all means necessary to maintain construction facilities in proper and safe condition throughout progress of the Work. In the event of loss or damage, promptly restore temporary construction facilities by repair or replacement at no change in the Contract Sum or Contract Time.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION

3.1 INSTALLATION OF TEMPORARY FACILITIES

A. Place temporary facilities after Construction Facilities Site Plan submittal has been approved and coordinated with the requirements above and with all other Sections.

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

3.1 REMOVAL OF TEMPORARY FACILITIES

A. Removal of Construction Facilities: Unless otherwise mutually agreed by University's Representative and Contractor, remove all temporary materials, equipment, services, and construction prior to Contract Completion review.

B. Cleaning and Repairs: Clean and repair damage caused by installation or use of temporary construction facilities on public and private rights-of-way. Replace any landscaping and mulch as to the satisfaction of the University so that it is in a condition equal to or better than the condition prior to the start of Work.

C. Where there is a loss in value of trees due to damage that cannot be replaced, the Contractor shall be liable and provide compensation for

a. 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.

b. Disputed sums shall be governed by applicable provisions of the Contract General Conditions.

c. If any tree pruning is deemed necessary by the Contractor in order to perform the intended Work, a written proposal shall be submitted to the University for review and approval prior to the work being implemented. Any tree trimming or pruning without the University's approval shall be considered as damage requiring repair, replacement, or compensation.

END OF SECTION

SECTION 01 54 00: SECURITY

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 Security requirements.

1.3 RELATED SECTIONS

A. Section 01 35 50 – Safety Procedures: General relationship between safety and security.
B. Section 01 51 00 – Temporary Utilities: For temporary lighting related to security.
C. Section 01 52 00 – Construction Area and Temporary Facilities: For fencing, construction aids and related elements.

1.4 SUBMITTALS

A. Security Program: Develop and submit a Security Program for the University's review and comment. Incorporate all corrections until a final Security Program is approved.
   a. Due within **15 Days** of the Notice to Proceed. Make any required modifications and file the final approved submittal for the project records. During the course of construction, submit any proposed revisions for acceptance prior to implementing any changes.
   b. The Security Program shall be in the form of a written document demonstrating compliance with the elements of the Contract General Conditions, this Section, and other related Sections and project requirements.
   c. Coordinate the Security Program with the Construction Area Plan submittal.

1.5 SECURITY

A. In addition to security requirements contained in the Contract General Conditions (Article 4.08-d), Contractor shall adhere to the following requirements for security:

1. Contractor shall protect the Work from theft, vandalism, unauthorized entry, or unauthorized access to digital servers. Contractor shall have sole responsibility for job site security.

2. Contractor shall maintain security throughout construction until the University's occupancy or acceptance.

3. Keying. Contractor shall not alter the University's access control hardware or keys. The University will control the distribution of an access key for the Contractor's use, or will provide University personnel to directly manage access at locked doorways.

1.6 ENTRY CONTROL

A. Contractor shall restrict entrance of persons and vehicles into project site to persons identified by the

University as authorized to enter. Verify proper identification of such person and maintain an access log with the date and time of each person entering and leaving a secure data room.

B. Implement temporary facilities to physically restrict entrance of unauthorized persons and vehicles into project site and existing facilities to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 55 00: 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 01 52 00 – Construction Area and Temporary Facilities: Coordination of access to field office, sheds, fencing, etc.
B. Section 01 58 00 - Project Identification and Signage: Directional and informational signage.

1.4 SITE ACCESS

A. Site Access: Use of designated existing on-site streets and driveways for construction traffic is permitted with restrictions.
    1. Review access routes with University Representative and comply with directions.
    2. Vehicles may use only designated routes and access points.
    3. Coordinate w/ Construction Area Plan submittal, Section 01 52 00 Construction Area and Temporary Facilities.
    4. Metal - tracked vehicles shall not use any paved areas on University property.
    5. Provide unimpeded access for emergency vehicles.
    6. Provide and maintain access to fire hydrants free of obstructions.
    7. Sweep streets and driveways daily or as necessary. Coordinate with pollution prevention, sediment, and erosion control measures.
    8. Clean and restore paving and other site features after construction use, where damage was the result of the Contractor’s use, even for streets, driveways, sidewalks, and other such elements that are outside of the designated Construction Area.

B. Traffic Control:
    1. Contractor shall comply with all on-campus and off-campus traffic regulations, including speed limits. Contractor shall pay all parking and traffic fines.
    2. Temporary blockage of site roadways and access to site parking lots and parking structures shall be only with approval of University's Representative. See Section 01 52 00 Construction Area and Temporary Facilities for additional requirements.
    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. Provide signage, cones and other suitable devices to direct traffic. Use lights during hours of low visibility to delineate traffic lanes and to guide traffic where necessary.
    5. Large vehicles shall have University public safety escort. Provide minimum 48 hours written notice through University Representative.
    6. Contractor shall comply with all safety regulations.

1.4 TRAFFIC SIGNS AND SIGNALS

A. Traffic Signs and Signals:
1. Provide temporary signs and signals as required by authorities having jurisdiction and in compliance with University's requirements transmitted through University Representative.
2. Contractor shall relocate signs and signals as necessary during construction.
3. Indicate all traffic and pedestrian signs on the Construction Area Plan submittal per Section 01 52 00 – Construction Area and Temporary Facilities.
4. Signs must comply with Caltrans standards.

1.5 CONSTRUCTION PARKING

A. Construction Parking must comply with the following:

1. Contractor may park vehicles and construction equipment inside the designated Construction Area without obtaining campus parking permits.

2. Contractor shall obtain campus parking permits or pay a parking meter for all of its vehicles parked outside of Contractor's fenced construction areas.
   a. Parking permits may be purchased from University Parking and Commuter Services, which maintains a Parking Kiosk on the north end of Rossow Street. General parking areas may also have daily parking pass machines where a passes may be purchased.
   b. Purchase of a parking permit does not guarantee a parking space will be available.
   c. Vehicles parked outside of the designated Construction Area without a parking permit, or with a permit but not the correct permit for the specific parking area, or without payment to the meter during regulated hours, or parked illegally in any way will be ticketed and may be towed.
   d. City of Arcata patrols parking meters and neighborhoods surrounding the campus and may issue citations for violations of their parking regulations.

3. University Parking Regulations may be found here: www.humboldt.edu/parking/regulations
   a. It is the Contractor's responsibility to ensure all employees and subcontractors are fully aware of all parking enforcement regulations. There will be no exceptions made.
   b. For any questions with regard to parking, contact parking@humboldt.edu or call (707)826-3773.
   c. University Police may be contacted for non-emergency purposes at (707)826-5555.

PART 2 – PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 MAINTENANCE OF PARKING AND ACCESS ROADS

A. Maintenance: Maintain traffic and parking areas in a sound condition. 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: Keep public and private rights-of-way and parking areas clear of construction-caused soiling, dust and debris, especially debris hazardous to vehicle tires. Perform cleaning as frequently as necessary.

END OF SECTION

SECTION 01 58 00: TEMPORARY PROJECT 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. Temporary project signage including informational signs.

1.3 RELATED SECTIONS

A. Section 01 35 00 – Environmental Protection: Coordination of signage for environmental protection.
B. Section 01 51 00 – Construction Area and Temporary Facilities: Coordination of signage locations.
C. Section 01 55 00– Vehicular Access and Parking: Coordination of signage w/ parking & traffic control
D. Section 01 74 19 – Waste Management and Recycling: Coordination of signage associated with the Waste Management and Recycling Plan.

1.4 SUBMITTALS

A. Temporary Project Signage Submittal: In coordination with the Construction Area Plan submittal, which identifies the locations and types of signs for the purposes of construction, the Temporary Project Signage submittal shall include the graphic design and signage material information to demonstrate compliance with project requirements.
   1. Due within **15 Days** of the Notice to Proceed. Make any required modifications and file the final approved submittal for the project records. During the course of construction, submit any proposed revisions for acceptance prior to implementing any changes.
   2. The Temporary Project Signage submittal shall include a copy of the signage graphics for all temporary signs to be used as part of the construction process, including, but not limited to the Project Identification Sign(s), traffic control signs, informational, and directional signs.

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 5/8-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. Hardware: Hardware shall be hot-dip galvanized steel.

2.3 PROJECT INFORMATIONAL SIGNS

A. Restrictions: Contractor shall not display signs other than 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. Adequacy of signage for safety and conformance to requirements of authorities having jurisdiction and trade practices shall be solely Contractor's responsibility.
   2. The University reserves the right to reject signage that does not meet the University's standards.

C. Sign Design: Informational signage shall be produced by professional sign painters or graphics designers 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. Where sign is related to vehicular access, comply with Caltrans standard details.

PART 3 – EXECUTION

3.1 TEMPORARY PROJECT SIGNAGE INSTALLATION

A. Project Informational Sign Construction: Construct sign support structure and install panels in durable manner, to resist high winds.
B. Project Informational Sign Installation:
   1. Provide portable structures shall resist overturning force of wind.
C. Field Painting: Paint all surfaces and edges of sign face and support 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 Signage Removal: Contractor shall remove Temporary Project Signage when directed, but no later than at the Final Completion. Contractor shall coordinate removal with requirements specified in Section 01 51 00 – Construction Area and Temporary Facilities.

END OF SECTION

SECTION 01 60 00: 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 01 33 00 - Submittals Procedures: Requirements applicable to submittals.
B. Section 01 41 00 - Regulatory Requirements: As applicable to product minimum requirements.
C. Section 01 42 00 - Reference Standards and Abbreviations: References to various standards, standard specifications, codes, practices and other requirements as they may apply to products.
D. Section 01 45 00 – Quality Control and Inspections
D. Section 01 63 00 - Product Substitution Requirements
E. Section 01 64 0 - Owner-Furnished Products
F. Other Sections as applicable

1.4 SUMMARY

A. Provide products as specified in the Contract Documents or as allowed by the Contract General Conditions and this Section.

B. See Contract General Conditions 36.03 (Product and Reference Standards), 36.04 (Shop Drawings, Samples, Equals, Substitutions), and 36.05 (Quality of Materials, Articles and Equipment).

1.5 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: Specified requirements for products are minimum requirements.

Refer to requirements of Section 01 45 00 - Quality Control and individual product Specifications Sections for specific requirements for products.

C. 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".

D. 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.

E. 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".

F. Code Compliance: All products, other than commodity products prescribed by Code, shall have a current ICC Evaluation Service (ICC ES) ESR. Such report may be used by the Building Official to verify products comply with code requirements, and establishes the acceptance criteria for identifying proper installation for code compliance upon completion. Refer to additional requirements specified in Section 01 41 00 - Regulatory Requirements. All products must conform to the Indoor Environmental Quality requirements under CalGreen and as for the LEED NC 4.0 Rating System.

G. 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.

H. 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.

1.5 PRODUCT OPTIONS

A. Product Options: Refer to Contract General Conditions, Article 36.04. 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 01 42 00 - Reference Standards and Definitions regarding compliance with referenced standards, standard specifications, codes, practices and requirements.

E. Products Specified by Identification of Manufacturer and Product Name or Number:

4. “Sole source”: No other product shall be accepted. Provide the specified product(s) of the specified manufacturer. This may occur in order to obtain a necessary item that is only available from one source. Products specified as “sole source” or “campus standard” anywhere within the Contract Documents have been found by the University that such particular material, product, thing, or service is designated by specific brand or trade name for one or more of the following reasons:
    1. In order that a field test or experiment may be made to determine the product’s suitability for future use.
    2. In order to match other products in use on a particular public improvement either completed or in the course of completion.
    3. In order to obtain a necessary item that is only available from one source.
    4 a). In order to respond to an emergency declared by a local agency, but only if the declaration is approved by a four-fifths vote of the governing board of the local agency issuing the invitation for bid or request for proposals.
    4 b). In order to respond to an emergency declared by the state, a state agency, or political subdivision of the state, but only if the facts setting forth the reasons for the finding of the emergency are contained in the public records of the authority issuing the invitation for bid or request for proposals.

5. "Acceptable Manufacturers": Product(s) of the named manufacturers, if equivalent to the specified product(s) of the specified manufacturer, may be acceptable in accordance with the requirements specified herein in the Article titled "'OR EQUAL' PRODUCTS."

6. Unnamed manufacturers: Products of unnamed manufacturers may be acceptable as follows:
    a. The phrase "or equal" shall be assumed to be included in the description of specified product(s), unless specifically stated that equals will not be accepted or considered, or if the product is specified as “sole source.” Equivalent products of unnamed manufacturers may 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."

7. Quality basis: Specified product(s) of the specified manufacturer shall serve as the “basis of design” 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" or abbreviation “OAE” is included, the requirements specified herein in titled "'OR EQUAL' PRODUCTS" shall apply.

H. Visual Matching: Where Specifications require matching a sample, the decision by the University 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 University and/or Architect.

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 36.04-c, and Public Contract Code section 3400 shall apply.
Submit complete product data, including drawings and descriptions of products, fabrication details and installation procedures. Include samples where applicable or requested.

1. Submit “or equal” products in accordance with Section 01 33 00 Submittal Procedures with all of the relevant product data, shop drawings, manufacturer’s instructions, etc, as well as a signed letter explaining the justification for the product being an equal as follows:
   a. A 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.
   b. A written, point-by-point comparison of characteristics of the proposed equal product with those of the specified product.
   c. A detailed description in written or graphic form as appropriate, indicating all necessary changes or modifications for other elements of the Work.
   d. An analysis of the “or equal’s” potential impact on the Construction Schedule.

2. Note: Products that meet the definition of an “or equal” should generally not result in any modifications or other elements of the Work or delay in the progress of the Work. Such conditions may be an indication that the proposed product should be submitted following the procedures for a Request for Substitution. Regardless, the Contractor shall coordinate installation and make changes to other work that may be required for the work to be complete with no cost to the University and no increase in Contract Time.

3. If, in the opinion of the University or 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 Request for

Substitution provisions of the Contract General Conditions (Article 36.04-d, Substitutions) and requirements specified in Section 01 63 00 - 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 requirements specified in Section 01 41 00 - Regulatory Requirements regarding compliance with minimum requirements of applicable codes, ordinances and standards.

B. Omissions and Discrepancies: Report to University, in the form of an RFI, immediately when elements essential to proper execution of the Work are discovered to be missing or containing any discrepancy in the Drawings and Specifications, or if the design intent is unclear.
See Section 01 34 00 Requests for Interpretation.

1.8 TRANSPORTATION, DELIVERY AND HANDLING

A. Manufacturer’s instructions and warranty: Comply with manufacturer's instructions and recommendations for transportation, delivery and handling, for full warranty compliance in addition to the general requirements listed below.

B. Transportation: Transport products by methods to avoid product damage.

C. Delivery:
   1. Schedule delivery to minimize long-term storage and prevent overcrowding construction spaces. Coordinate to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
   2. 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. Provide equipment and trained personnel to prevent soiling, marring or other damage.
   2. 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: Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible.
   1. Periodically ensure products are undamaged, and maintained under required conditions.
   2. Remove and replace products damaged by improper storage or protection with new products at no change in Contract Sum or Contract Time.

B. Inspection Provisions: Provide access for inspection and measurement of quantity or counting of units. See Contract General Conditions for procedures required for payment or partial payment for materials stored onsite or offsite.

C. Structural Considerations: Store heavy materials away from the structure in a manner that will not endanger supporting construction.

D. Weather-Resistant Storage:
   1. Store moisture-sensitive products above ground, under cover in a weather tight enclosure or covered with an impervious sheet covering. Provide adequate ventilation to avoid condensation. See Section 01 52 00 Construction Area and Temporary Facilities for placement of temporary sheds.

   2. Maintain storage within temperature and humidity ranges required by manufacturer's instructions. See Section 01 51 00 Temporary Utilities for providing temporary heating, cooling, dehumidification, and ventilation.

   3. For exterior storage of fabricated products, place products on raised blocks, pallets or other supports, above ground to not create ponding or misdirection of runoff.

   4. Store loose granular materials on solid surfaces. 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 used)

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Installation of Products:
   1. Comply with manufacturer's instructions and recommendations for installation of products, except where more stringent requirements are specified or necessary due to Project conditions or are required by authorities having jurisdiction.
   2. Anchor each product securely in place, accurately located and aligned with other Work.
   3. Clean exposed surfaces and provide protection to ensure freedom from damage and deterioration at time of Contract Completion review.

END OF SECTION

SECTION 01 63 00: 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 RELATED SECTIONS

A. Section 01 33 00 – Submittal Procedures: for related requirements regarding submittals.
B. Section 01 61 00 - Product Requirements: for requirements regarding product options.

1.4 SUBSTITUTION OF MATERIALS AND EQUIPMENT

A. "Substitution:" Shall mean a product that is of lesser or greater quality or performance than the specified material or equipment in accordance with Contract General Conditions Article 36.04(d).
   a. This is distinct from a product that is determined to be "or equal" as described in Section 01 60 00 Product Requirements and per Contract General Conditions 36.04(c) Alternatives or Equals.

B. Substitutions may only be authorized by properly executed Change Order or Field Instruction including all associated costs including additional professional services where applicable. Comply with all procedures of the Contract General Conditions for proposing substitutions.

C. Substitutions shall not be considered when included in a normal product data submittal format, and the University and/or Architect's approval of such a submittal containing substitutions without compliance with all required procedures shall not relieve the Contractor of their responsibility to comply with all Contract Documents.

1.5 REQUEST FOR SUBSTITUTION PROCEDURES

A. 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 University for review and acceptance.
      a. Submit the request for substitution electronically using form provided by or otherwise approved by the University.

   2. Requests for Substitution shall include complete product data, including drawings and descriptions, fabrication details and installation procedures. Include samples where applicable or requested. Such elements are to follow the same requirements as per standard submittals.

   3. Requests for Substitution shall also 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. Requests for Substitution 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. Requests for Substitution shall include detailed cost data, including a proposal for the net change, if any, in the Contract Sum. Set the format for cost data, if results in any proposed change to the Contract Time or Sum shall be based on the approved format for a Proposed Change Order.

6. Requests for Substitution may require approval from the authorities having jurisdiction. The burden for such requirements shall be on the Contractor for coordination and fees for.

7. If, in the opinion of the University and/or Architect, the Requests for Substitution 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 at no change in the Contract Time or Sum.

B. Contract Document Revisions:

1. 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 may make revisions if approved in writing in advance by University.

2. Contractor shall pay the University for the costs associated with the additional services of the Architect, other responsible design professionals and University for researching and reporting on proposed substitutions or alternative sequence and method of construction. 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.

3. 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 used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 72 00: 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.

1.3 RELATED SECTIONS

A. Section 01 31 00 – Project Coordination: For proper sequencing and interfacing of the Work.
B. Section 01 31 20 - Project Meetings: General requirements for pre-installation conferences.
C. Section 01 32 00 - Construction Progress Documentation: Requirements for scheduling Work.
D. Section 01 73 20 - Cutting and Patching: To provide access for performing the Work.
E. Section 01 77 00 - Contract Closeout Procedures: Project record documents, including layout data.

1.4 LAYOUT OF WORK

A. Contractor is responsible for the correct layout and verification of the locations and elevations of buildings, site elements, and other components of the Work.
B. Where necessary, due to the scale and complexity of the Project requirements, and to aid in the avoidance of construction errors or improper coordination of the Work, the Contractor shall select and pay for services of a land surveyor, registered in the State of California.
C. Reviews by University and Architect of survey and layout data shall be only for general conformance with the design concept and requirements based on the information presented and 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 Used)

PART 3 - EXECUTION

3.1 PREPARATION

A. Manufacturer's Requirements: Determine product manufacturer's requirements and recommendations prior to commencing Work.

B. Preparations: Perform preparation actions according to manufacturer's instructions and recommendations and according to specified procedures.
   1. Perform surface preparation as necessary to create suitable substrates for application, installation and placement of products.

C. Existing Utility Information: 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. Coordinate with University and with authorities having jurisdiction. Call for Underground Service Alert at 811 prior to any digging.

D. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by University or others. See Section 01 51 00 Temporary Utilities.

E. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, Verify dimensions of other construction by field measurements before fabrication. coordinate fabrication schedule with construction progress to avoid delaying the Work.

F. Space Requirements: Verify space requirements 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, Submit an RFI to University. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

H. Verification of Construction Layout: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks, and locate survey reference points. If discrepancies are discovered, promptly notify University by submittal of an RFI.

3.2 CONTROL AND REFERENCE POINTS

A. Survey Control and Reference Points: Locate and protect survey control and reference points. Control datum for survey shall be as indicated on the Drawings or the separate survey provided by the University where not included in the services of the Architect.
   1. Comply with requirements of authorities having jurisdiction for survey monument preservation on capital improvement projects where monument points are present.
   2. Comply with all requirements of the Business and Professions Code Section 8771.

3.3 SURVEYING AND FIELD ENGINEERING SERVICES

A. Surveying and Field Engineering Services: Establish elevations, lines and levels for all Work under the Contract. Locate and lay out by instrumentation and similar appropriate means.

B. Note on Project Record Drawings utility locations, slopes and invert elevations as well as site improvements, including, but not limited to pavements, curbs, headers, sewers, storm drains, structures, and paving. See Section 01 78 90 Project Record Documents.

C. Provide and maintain stakes for cutting, filling, grading and topsoil placement, to establish finished grade or flow line indicated on Contract Drawings.

D. Lay out grid or axis for structures, building foundation, column locations and ground floor elevations.

E. 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.

F. Establish dimensions within tolerances indicated. Do not scale Drawings.

G. Site Grading Verification: Upon completion of grading, survey graded areas and establish that elevations are correct and within acceptable tolerances for paving and finish grading.

H. Verification of Work: Periodically verify layout and completed conditions of the Work by same means.

END OF SECTION

SECTION 01 73 00: 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 01 31 20 - Project Meetings: Pre-installation and coordination conferences where procedures for installing and applying products are reviewed prior to performance of the Work.
B. Section 01 60 00 – Product Requirements: For general requirements of products and systems.
C. All other Sections: Specific requirements for installing, applying and placing products.

1.4 EXECUTION

A. Manufacturer's Requirements: Determine product manufacturer's requirements and recommendations prior to commencing Work.

B. Execution: Perform installation, application and placement actions according to manufacturer's instructions and recommendations and according to specified procedures.
   1. Perform surface preparation as necessary to create suitable substrates for application, installation and placement of products.
   2. Where required, provide temporary enclosures and devices to modify the environmental conditions until they are suitable for the installation requirements.

PART 2 – PRODUCTS (Not used)

PART 3 - EXECUTION

3.1 INSTALLATION, APPLICATION AND PLACEMENT OF PRODUCTS

A. Installation, Application and Placement, General: locate the Work and components of the Work accurately, in correct alignment, orientation and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
   4. Install products at the time and under conditions that will ensure the best possible results. maintain conditions required for product performance until acceptance of the Work.
   5. 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.

A. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

B. Anchors and Fasteners: 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, submit RFI.
   2. Allow for building movement, including thermal expansion and contraction.

C. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

F. Cleaning: Comply with requirements specified in Section 01 74 00 - Cleaning Requirements.

D. Protection: Provide barriers, covers and other protective devices as recommended by manufacturer and complying with general requirements specified in Section 01 52 00 – Construction Area and Temporary Facilities.

E. Limiting Exposures: 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 CORRECTION OF THE WORK

A. Correction of the Work, General: repair or remove and replace defective construction. Restore damaged substrates and finishes to match original and new surrounding construction.
   1. Comply with requirements in Section 01 73 20 - 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. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
   4. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
   5. Remove and replace chipped, scratched, and broken glass.

B. Restoration of Existing Conditions: Restore permanent facilities used during construction to their original condition or to match new construction.

END OF SECTION

SECTION 01 73 20: CUTTING AND PATCHING

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 procedural requirements for cutting and patching, including:
   1. Cutting and patching existing construction to accommodate new construction.
   2. Cutting and patching existing construction damaged or defaced during construction as required to restore to existing or better condition at the time of award of Contract.
   3. Cutting and patching required to:
      a. Install or correct non-coordinated Work.
      b. Remove and replace defective and non-conforming Work.
      c. Remove samples of installed Work for testing.

B. Refer to other Sections and drawings for specific requirements of the extent and limitations applicable to cutting and patching, demolishing, or altering existing elements of the Work.
   1. Requirements of this Section also apply to mechanical and electrical installations, however, additional special procedures may be required for such systems.

1.3 RELATED SECTIONS

A. Section 01 31 00 - Project Coordination: Requirements for coordination among all divisions.
B. Section 01 33 00 – Submittal Procedures: Requirements for submittals and shop drawings.
C. Section 01 35 10 - Hazardous Materials Procedures: As applicable to any demolition activities.
D. Section 01 52 00 – Construction Area and Temporary Facilities: Dust-control barriers at cutting and patching locations.
E. Section 01 74 00 - Cleaning Requirements: Cleaning after cutting and patching Work.
F. All individual Divisions:
   1. Cutting and patching incidental to Work specified in the Section.
   2. Coordination with Work specified in other Sections for openings required to accommodate Work specified in those other Sections.

1.4 SUBMITTALS

A. Product Data and Coordination or Shop Drawings: Submit for approval all materials, products, or systems to be used in the cutting and patching for matching the existing conditions. Submit samples or mock-ups when requested in order to demonstrate the visual qualities of the matching finishes. Comply with Section 01 33 00 Submittals Procedures.

B. Written Request to Proceed for Cutting and Alteration:
   1. Submit written requests 5 Days minimum prior to planned activities which potentially 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 forces or by others under separate contract with University.
      f. Existing construction not otherwise indicated to be revised by Work under the Contract.

2. Include in requests for cutting and alteration the following information:
   a. Identification of Project.
   b. Location and description of affected Work. Include shop drawings as necessary to identify locations and communicate descriptions and coordination clearly.
   c. Description of proposed Work and products to be used. Indicate all required submittals and their current status. All relevant required submittals should already be approved based on the required review periods, otherwise the cutting and patching may be delayed with no change to Contract Time or Sum.
   d. List possible alternatives to cutting and patching if there are such options.
   e. Indicate date and time cutting and patching Work will be performed, including duration.
   f. 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.
   g. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service may be disrupted. Comply with the requirements of Section 01 51 00 Temporary Utilities.
   h. Where cutting and patching involves addition of reinforcement to structural elements, submit details to show how reinforcement is integrated with the original structure. This may include coordination drawings or engineered shop drawings by Contractor including engineering calculations and details.

3. Approval by the University to proceed with cutting and patching does not waive the University's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory. Minimize impact on University operations and on concurrent operations by other contractors.

1.5 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their gravity or lateral load-carrying capacity or load-deflection ratio.
   1. Obtain approval to proceed from the University for cutting and patching proposal prior to cutting and patching the following structural elements:
      a. Bearing and retaining walls
      b. Structural concrete
      c. Structural steel
      d. Headers
      e. Timber and primary wood framing
      f. Structural decking
      g. Stair systems
      h. Miscellaneous structural members
      i. Equipment supports
      j. Piping, ductwork, vessels and equipment

B. Operational and Safety Limitations: Do 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. Obtain approval to proceed with the cutting and patching proposal prior to cutting and patching the following operating elements or safety-related systems, as applicable:
      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: Do not cut and patch construction exposed on the exterior or interior 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. Remove and replace work cut and patched in a visually unsatisfactory result.

D. Cutting and Patching Conference: Prior to proceeding, meet at the Project site with parties involved with the cutting and patching work. Follow the outline of procedures as required for pre-installation conferences per Section 01 31 20 Project Meetings. Review areas of potential interference or conflict. Coordinate all aspects of the Work and resolve potential problems.

PART 2 - PRODUCTS

2.1 PATCHING MATERIALS

A. Patching Materials, General: As required for patch and to match surrounding construction.
1. Provide same products or types of construction as that in existing structure, or specialized patching products as needed to extend or match existing.
2. 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.
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, use concrete mix with maximum 3/8-inch aggregate and minimum 3000 psi 28-day compressive strength. Provide dowels to existing paving and reinforce new paving with minimum No. 4 reinforcing steel bars at 16-inches on center each way. Welded wire fabric reinforcement will not be acceptable.

C. Patching of Lawns and Grasses: Restore areas trenched, disturbed or damaged. Provide sod or seeded planting mix, to match existing lawn or grass area. Ensure successful growth.

D. Patching of Building Finish Materials: Match existing products and finishes. Confirm colors, patterns and textures with University. Custom cut new materials to fit and to match joint patterns with existing materials.

G. Refer to other Sections for additional requirements. Ensure compatibility of materials including coatings and paint products. See Painting specification section for surface preparation.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examination, General: Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered. Inspect existing conditions prior to commencing Work, including elements subject to damage during cutting and patching.
1. Before proceeding, meet at the site with parties involved in cutting and patching, including asbestos abatement, mechanical and electrical trades. Review areas of potential interference

and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

2. Proceeding with cutting or patching shall be clear indication to mean that existing conditions were found by Contractor to be acceptable. The University's approval to proceed shall not relieve the Contractor of their requirements to comply with all conditions of the Contract Documents.
3. After uncovering existing Work, inspect conditions affecting proper accomplishment of Work.

3.2 PREPARATION

A. Temporary Supports: Provide supports to ensure structural integrity of the Work and provide devices and methods to protect other portions of Project from damage. Such Construction Aids shall be in accordance with Section 01 52 00 Construction Area and Temporary Facilities.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. 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. Ensure underground service alert (811) has been executed.

E. Weather Protection: Provide protection from elements for areas which may be exposed by uncovering Work. Maintain excavations free of water.

3.3 CUTTING AND PATCHING

A. Cutting and Patching, General: Execute cutting, fitting, and patching, excavation and fill, as necessary to complete the Work. Employ skilled workers. Proceed with cutting and patching at the earliest feasible time and complete without delay.
   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.
      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. Finish must be consistent from floor to ceiling and corner to corner.
      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:
   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 as applicable at new penetrations to maintain fire rating.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances. Restore substrates and finishes with products to match existing construction and as specified in product Sections of the Specifications for new construction. :
   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 painted surface, extend final paint coat over entire unbroken area containing the patch, after 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: refinish surfaces to match adjacent and similar finishes as used for the Project.
   1. For continuous surfaces, refinish to nearest intersection or natural break.
   2. For an assembly, refinish entire unit.

E. Penetrations at Fire-Rated Construction: Verify if existing construction consists of fire rated assemblies. Submit RFI where unclear. At penetrations of fire rated walls, partitions, ceiling, or floor construction, 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 specific Sections related to fire rated construction where applicable.

F. Restoration and Finishing: Finish surfaces to match adjacent and similar finishes.
   1. Restore Work with new products as specified in individual product Specifications Sections.
   2. 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.
      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, make a smooth and clean transition. 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, notify Architect. 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: Comply with manufacturer's instructions and install thickness and coats.

3.4 CLEANING

A. Cleaning: Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition. Comply with Section 01 74 00 Cleaning Requirements.

END OF SECTION

SECTION 01 74 00: CLEANING 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. Cleaning during construction.

B. Cleaning for Contract Completion review and final acceptance of the Work.

1.3 RELATED SECTIONS

A. Additional Requirements: Cleaning for specific products or elements of Work are described in individual Sections.

1.4 SUBMITTALS

A. Cleaning Product List & Procedures: Contractor shall submit complete list of all cleaning agents and materials as well as description of cleaning processes to be used for cleaning of the Work for University's review and approval.

1.5 QUALITY ASSURANCE

A. Cleaning and Disposal Requirements, General: Conduct cleaning and disposal operations in compliance with all applicable codes, ordinances and regulations, including environmental protection laws, LEED rating system requirements, and CalGreen mandatory measures.

B. Cleaning Workers: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a commercial building cleaning program.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents and Materials: Use only those cleaning agents and materials which will not create hazards to health or property and which will not damage or degrade surfaces. Comply with all applicable manufacturer’s recommendations and instructions.

PART 3 - EXECUTION

3.1 CLEANING DURING CONSTRUCTION

A. Garbage Control: Control accumulation of debris, waste materials and rubbish. Periodically, dispose of debris, waste and rubbish off-site in a legal manner and in accordance with construction waste management and recycling requirements for this Project.

B. Cleaning of Existing Facilities: Contractor shall clean surfaces in existing buildings where alteration and renovation Work is being performed or where other construction activities have caused soiling and accumulation of dust and debris. Clean dust from horizontal and vertical surfaces, including lighting fixtures. Clean or replace HVAC filters. Note that all HVAC supply, return, or other registers must be properly covered and sealed prior to any potential dust generating activities.

C. Clean sidewalks, driveways, parking lots, streets, and Construction Area access ways frequently to maintain all thoroughfares free of dust, debris, soil, mud, and other contaminants, including any hazard which may be a threat to tires or feet. Coordinate activities with pollution, erosion, and sedimentation prevention requirements.

D. Cleaning Frequency: At a minimum, clean all Work areas daily. Coordinate cleaning activities with related project safety requirements.

E. Failure to Clean: Should cleaning by Contractor not be sufficient or acceptable to University's Representative, especially regarding paths of travel, University may engage cleaning service to perform cleaning and deduct costs for such cleaning from sums owed to Contractor.

3.2 CONTRACT COMPLETION REVIEW CLEANING, GENERAL

A. Contract Completion Review Cleaning, General: Execute a thorough cleaning prior to Contract Completion review by University and Architect. Contractor shall complete final cleaning before submitting final Application for Payment.
   1. Conduct cleaning in compliance with regulations of authorities having jurisdiction, industrial safety standards, CalGreen and LEED green building requirements for cleaning and indoor environmental quality.
   2. Employ professional building cleaners to thoroughly clean building.
   3. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
   4. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
   5. Clean the site, including landscape development areas, of rubbish, litter and foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits.

B. Waste Disposal:
   1. Remove waste materials from the site and conduct disposal in a lawful manner.
   2. Do not burn or bury any materials.
   3. Do not discharge volatile, harmful or hazardous materials into drainage systems.
   4. Where extra materials of value remaining after completion of associated work have become the University's property, arrange for final relocation and stacking of these materials as directed in the location approved by the University.

3.3 INTERIOR CLEANING

A. Interior Cleaning:
   1. Remove labels that are not permanent labels.
   2. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from all visible interior and exterior surfaces.
   3. Remove dust from all surfaces, including, but not limited to light fixtures, ledges, plumbing fixtures, tops of door and window frames, interiors of cabinets and casework.

4. Remove waste and surplus materials, rubbish and temporary construction facilities, utilities and controls per the requirements specified.

B. Accessories and Fixtures Cleaning: Clean building accessories, including toilet partitions, fire extinguisher cabinets, lockers and toilet accessories, all plumbing fixtures and all lighting fixture lenses and trim.

C. Glass and Mirror Cleaning: Clean and polish all glass and mirrors. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

D. Metalwork: Clean and buff all metalwork, to be free of soiling and fingerprints. Mirror finished metalwork shall be buffed to high luster.

E. Floor Cleaning: Clean floors to dust-free condition, free of stains, films and similar foreign substances and implement the following minimum requirements for various types of floor surfaces:

1. Exposed concrete floors: Thoroughly sweep and wet mop floors in enclosed spaces. Contractor shall mop concrete floors and, at concrete floors in occupied spaces, apply floor finish as specified for resilient flooring. At unoccupied spaces, Contractor shall leave concrete floors broom clean.

2. Ceramic tile flooring: Thoroughly sweep and mop tile flooring. Comply with specific requirements in tile and installation materials manufacturers for cleaning materials.

3. Resilient flooring: Thoroughly sweep all resilient flooring. Contractor shall damp wash and wax (as appropriate) all resilient flooring. Comply with specific requirements in applicable resilient flooring Sections, and notes of the Drawings.

4. Carpet cleaning: Use a HEPA filtered vacuum and comply with accepted industry practices for cleaning commercial carpet, subject to review and acceptance by University. Spot clean and generally clean carpet using only approved carpet cleaning solution, scrubbers and solution extraction-type vacuuming equipment.

F. Ventilation System Cleaning: Replace filters and clean heating and ventilating equipment used for temporary heating, cooling and ventilation. See section 01 51 00 Temporary Utilities.

3.4 EXTERIOR CLEANING

A. Building Exterior Cleaning: Clean exterior of adjacent facilities where construction activities have caused soiling and accumulation of dust and debris.
1. Remove labels that are not permanent labels.
2. Wash down exterior surfaces to remove dust.
3. Clean exterior surfaces of mud and other soiling.
4. Clean exterior side of windows, storefronts and curtainwalls, including window framing.

B. Glass and Mirror Cleaning: Clean and polish all glass and mirrors. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

C. Site Cleaning: Broom clean exterior paved surfaces. Rake clean other surfaces of the grounds.
1. Wash down and scrub where necessary all paving soiled as a result of construction activities.

Thoroughly remove mortar droppings, paint splatters, stains and adhered soil.

2. Remove from the site all construction waste, unused materials, excess soil and other debris resulting from the Work. Legally dispose of waste.

3.5 PEST CONTROL

A. Pest Control: Contractor shall engage an experienced, licensed exterminator to inspect and rid the project area of insects, rodents and other pests immediately prior to Project Completion.
   1. Exterminator shall prepare and submit report of inspection and extermination.
   2. Extermination materials shall comply with applicable pest control regulations and University policy and not leave any residue which may be harmful to humans or wildlife.

3.6 CLEANING INSPECTION

A. Cleaning Inspection: Prior to Final Payment or acceptance by University for partial occupancy or beneficial use of the premises, Contractor and University's Representative shall jointly conduct an inspection of interior and exterior surfaces to verify that entire Work is acceptably clean.

B. Inadequate Cleaning: Should final cleaning be inadequate, as determined by University's Representative, and Contractor fails to correct conditions, University may engage cleaning service under separate contract and deduct cost from Contract Sum.

END OF SECTION

SECTION 01 74 19: WASTE MANAGEMENT AND RECYCLING

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. Construction waste management and recycling requirements.

1.3 RELATED SECTIONS

A. Section 01 35 00 – Environmental Protection
B. Section 01 35 10 – Hazardous Materials Procedures
C. Section 01 52 00 – Construction Area and Temporary Facilities
D. Section 01 58 00 – Temporary Project Signage
E. Section 01 74 00 – Cleaning Requirements

1.4 SUBMITTALS

A. Waste Management and Recycling Plan: Develop and submit a Waste Management and Recycling Plan for the University's review and comment. Incorporate all corrections until a final Plan is approved.
   a. Due within **15 Days** of the Notice to Proceed. Make any required modifications and file the final approved submittal for the project records. Post in a conspicuous location on the Project Site and maintain a copy in the Contractor's Field Office. Post approved signage in the relevant locations in the Construction Area.
   b. During the course of construction, submit any proposed revisions for acceptance prior to implementing any changes.
   c. Waste Management and Recycling Plan shall be in the form of a written document demonstrating compliance with the elements of the Contract General Conditions, this Section, and other related Sections and project requirements.
   d. Coordinate the Waste Management and Recycling Plan with the Construction Area Plan submittal as per Section 01 52 00 Construction Area and Temporary Facilities.

B. Construction Waste Records: Implement Waste Management and Recycling Plan and maintain and submit records to demonstrate compliance. Use form approved by the University.
   a. Review drafts in-progress at each Construction Progress Meeting and prior to each Application for Payment.
   b. Submit final Construction Waste Records prior to Project Completion.

1.5 GENERAL REQUIREMENTS

A. Hazardous materials requirements are not included in this Section. Refer to Section 01 35 10 Hazardous Materials Procedures and the Contract General Conditions.

B. Develop and implement a Waste Management and Recycling Plan. Track all landfilled waste, salvaged, and recycled materials leaving the Construction Area. Record weights on approved form and submit with weight tickets/receipts. Maintain project site in sanitary and clean condition throughout the course of construction.

1.6 WASTE MANAGEMENT AND RECYCLING PLAN

A. Waste Management and Recycling Plan requirements:
   a. Develop and implement Construction Waste Management Plan that results in not less than 75% by weight of total demolition and construction waste generated by the Work. Note this is consistent with LEED Rating System and more restrictive than the General Conditions Section 35.3g Integrated Waste Management.
   b. Plan shall include, at a minimum:
      i. List of types and estimated quantities of waste materials projected to be generated by the Work.
      ii. Identification of how each material will be disposed of, either by landfill or transfer station, recycling facility, or salvage.
      iii. List the names and locations of each of the above facilities.
      iv. Hauling and transportation procedures.
      v. Site diagram showing locations of materials collection and containers.
      vi. Site signage plan and container labeling for informing all site workers of Construction Waste Management Plan.
      vii. Waste Diversion Form for recording waste materials and recording weight tickets and landfill vs. recycling methods during the course of construction, to be updated and reviewed at each Construction Progress Meeting and prior to each Application for Payment.
      viii. Worker waste management & recycling training program outline.

1.7 WASTE MANAGEMENT AND RECYCLING REQUIREMENTS

A. Materials and equipment accruing from demolition of site elements, equipment, systems, buildings or structures or parts thereof, not identified to be retained by the University, shall be removed by the Contractor from the Project site and shall be disposed of by the Contractor at Contractor's expense, or shall be recycled or otherwise salvaged wherever possible.

B. All disposal shall be in compliance with local, State and Federal laws. Once an item has been removed for disposal, salvage, or recycling, it becomes the responsibility of the Contractor.

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 Codes, ordinances, statutes and regulations.

E. Excavated Materials: Native soil complying with the requirements of may be used for backfill, fill and embankments where suitable for the given condition. Do not stock pile excess materials on site. Remove all excess soils from the site and dispose of legally.

F. Daily remove all debris such as spent air filters, oil cartridges, cans, bottles, combustibles and litter. Take care to prevent dust, trash, and papers from blowing in wind. Collect immediately.

G. Washing of cementitious mixing vessels, paint supplies, or other containers where waste water may reach storm drains, natural water courses, or existing or proposed landscape areas shall not be permitted. Refer to Section 01 35 00 Environmental Protection.

1.8 CONSTRUCTION WASTE & RECYCLING SIGNAGE

A. Develop and install temporary signage related to the Waste Management and Recycling Plan.

B. Provide graphic design for all signage and comply with Section 01 58 00 – Temporary Project Signage.

C. Provide not less than one general sign that includes summarized requirements of the Waste Management and Recycling Plan, as well as multiple individual signs of adequate size and clarity such that each collection bin and temporary storage area for such materials is readily identifiable to all personnel. Signage shall be specific in terms of what materials are acceptable or unacceptable for the designated bin or location.

D. Maintain signage in a suitable condition and replace signage as bins are delivered and removed from the Construction Site.

1.9 WORKER TRAINING PROGRAM

E. Train all personnel on the job specific conditions and general elements of the Waste Management and Recycling Plan. Employee training program to be developed and completed by the Contractor prior to starting work and for all new employees and subcontractors as they first enter the Construction Area.
   a. Distribute copy of the Waste Management and Recycling Plan and review procedures and locations established for the collection of materials.
   b. It is essential that all personnel follow all sorting requirements as the course of construction progresses, rather than attempting to sort materials after already heaped in mixed piles or bins.

1.10 CONSTRUCTION WASTE RECORDS

A. Track and record the weight of all materials using an approved scale.
B. Maintain copies of all related receipts for all materials disposed of by landfill or transfer station.
C. Maintain copies of all related receipts for all materials recycled, or otherwise salvaged.
D. Enter each receipt in the approved waste record form in a timely manner throughout the course of construction.
E. Review the Construction Waste Records at each Construction Progress Meeting and prior to each Application for Payment.
F. Not including excavated soils or land clearing debris, the total weight of all materials recycled and salvaged shall be equal to or greater than 75% of the total of all recycled, salvaged, and landfilled materials combined.
G. Demonstrate final compliance by submitting Submit final Construction Waste Records prior to Project Completion.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

A. Implement the Waste Management and Recycling Plan and Construction Waste Records requirements as specified above.

B. Notify University of any discrepancy or issue which may require specific attention.

C. Contractor's failure to comply with the requirements of this section shall be considered a loss to the University and shall be compensated appropriately.

END OF SECTION

SECTION 01 75 00: STARTING AND ADJUSTING

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, testing, adjusting, and balancing systems.

1.3 RELATED SECTIONS

A. Section 01 31 00 - Project Coordination: For required coordination for system completeness.

B. Section 01 31 20 – Project Meetings: For general requirements for project meetings and for pre-installation conferences.

C. Section 01 45 00 - Quality Control: Manufacturers field reports.

D. Section 01 78 30 - Operation and Maintenance Manuals: System operation and maintenance data and extra materials.

E. Section 01 82 00 – Demonstration and Training: For training University staff on start-up procedures.

F. Other sections including those related to commissioning requirements.

1.4 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems. Verify environmental conditions including degree of enclosure, temperature, humidity, and other factors are within the appropriate ranges for the system. Ensure the environment is clean and free of dust or other contaminants. Remove plastic covers or other protective elements only after all conditions are satisfactory.

B. Notify University and Commissioning agent, as applicable, in writing at least seven calendar days prior to start-up of each item.

C. 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. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. 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, 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. Submit a written Report in accordance with Section 01 33 00 - Submittals Procedures that equipment or system has been properly installed and is functioning correctly.

1.5 TESTING, ADJUSTING, AND BALANCING

A. Testing Agency: 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 indicating observations and results of tests and indicating 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.

D. Implement the required Demonstration and Training of University staff in accordance with Section 01 82 00.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 77 00: CONTRACT CLOSEOUT 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. Contract closeout procedures, including Contract Closeout meetings, correction ("punch") lists, submittals and final payment procedures.

1.3 RELATED SECTIONS

A. Section 01 33 00 - Submittals Procedures: General requirements for submittals.

B. Section 01 74 00 - Cleaning Requirements: Final cleaning as part of Contract closeout.

C. Section 01 78 50 - Warranties and Bonds: To be submitted as part of Contract closeout.

D. Section 01 78 90 – Project Record Documents: Project record drawings and specifications to be submitted as part of Contract closeout.

E. All other Sections as applicable.

1.4 SUBMITTALS

A. Punch List
B. Final Completion Submittals:
    1. Agency Document Submittals;
    2. Final Specifications Submittals;
    3. Certificates of Compliance and Test Report Submittals;
    4. Subcontractors List;
    5. Warranty Documents.
C. Final Application for Payment.

1.5 FINAL COMPLETION ACTIONS

A. Contractor Responsibility: Contractor shall be solely responsible for the timely completion of all required Contract closeout items except for filing of Notice of Completion by the University.

B. Warranties, Bonds and Certificates: Contractor shall submit specific warranties, guarantees, workmanship bonds, maintenance agreements, final certifications and similar documents.

C. Locks and Keys: Contractor shall change temporary lock cylinders over to permanent keying and transmit keys to University, unless otherwise directed or specified.

D. Tests and Instructions: Contractor shall complete start-up testing of systems, operations and maintenance manuals, and instruction of the University's personnel. Contractor shall remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements. All such elements and other similar requirements are included in more detail in other Sections.

1.6 CONTRACT COMPLETION REVIEW

A. Contractor's Notification for Contract Completion Preliminary Review Meeting: When the Contractor determines that the Work is nearly complete in accordance with Contract Documents, the Contractor shall submit to University written certification that the Contract Documents have been reviewed, the Work has been inspected by the Contractor and by authorities having jurisdiction, and the facility is ready for the Contract Completion review.

B. Contract Completion Preliminary Review Meeting: University's Representative and, as authorized by the University, Architect and Architect's and University' representatives and consultants, as appropriate, will attend a meeting at the Project site to review Contract closeout procedures and to review the items to be completed and corrected Punch List to make the Work ready for acceptance by the University. This meeting shall be scheduled four weeks prior to scheduled completion date.

C. Punch List Submittal: Contractor shall prepare, subsequent to the Contract Completion Preliminary Review Meeting, a typewritten, comprehensive list of items to be completed and corrected (Punch List) to make the Work ready for acceptance by the University. It is understood that a punch list is in the constant state of change, but this is an official snapshot in time for this formal Punch List Submittal.
   1. The Punch List shall include all items to be completed or corrected prior to the Contractor's application for final payment. The University or inspector(s) may add items to the Contractor's Punch List, but it is the Contractor's responsibility to maintain the full and complete list including items known to be deficient even if not specifically noted by the University.
   2. The Punch List shall identify items in a sequential order and include the room number and name in addition to a description of the issue.
   3. All separate lists shall be compiled by the Contractor into the all-inclusive master Punch List.
   4. Items to be considered shall include but not be limited to the following (as applicable):
      a. Corrections to construction.
      b. Operation and maintenance data (manuals).
      c. HVAC testing and balancing reports.
      d. Spare parts and extra materials.
      e. Keys, permanent keying and lock cylinders.
      f. Warranties and guaranties.
      g. Project record Drawings and Specifications.
      h. Project record construction schedule.
      i. State Fire Marshal Inspection.
      j. Elevator Inspection.
      k. Other regulatory inspections.
      l. Removal of construction facilities and temporary controls.
      m. Final cleaning and pest control.
      n. Landscape maintenance.
      o. Commissioning/equipment startup.
      p. Demonstration and training.
      q. Acceptance.
      r. Notice of Completion, filing by University.
      s. Final application for payment.
      t. Occupancy by University.
      u. Other closeout items specified.

D. Contract Completion Meeting: On a date mutually agreed by University and Contractor, a meeting shall be conducted at the Project site to determine whether the Work is satisfactory and has achieved Contract Completion.
   1. Contractor shall provide a minimum seven calendar days written notice to the University's

Representative for requested date of Contract Completion meeting. Show on the Construction Progress Schedule.
2. Architect and the Architect's consultants may attend the Contract Completion meeting.
3. In addition to conducting a walk-through of the facility and reviewing the Punch List, the purpose of the meeting shall include submission of warranties, guarantees and bonds to University, submission of final operation and maintenance manuals, provision of specified extra materials to University, and submission of other Contract closeout documents and materials as required and if not already submitted.
4. Architect and Architect's consultants, as appropriate, may conduct a walk-through of the facility with the University's Representative and Contractor to review the completion of the Punch List.
5. Architect and University may update the Punch List and record additional items as may identified during the walk-through, including notations of corrective actions to be taken.
6. Contractor shall update the Punch List and submit it within five calendar days to the University.

E. Uncorrected Work: Refer to requirements specified in Section 01 45 00 - Quality Control regarding Contract adjustments for non-conforming Work.

F. Clearing and Cleaning: Prior to the Contract Completion review, Contractor shall conduct a thorough cleaning and clearing of the Project area, including removal of construction facilities and temporary controls. Refer to Section 01 74 00 - Cleaning Requirements.

G. Inspection and Testing: Prior to the Contract Completion review, Contractor shall complete inspection and testing required for the Work, including securing of approvals by authorities having jurisdiction.
1. Complete all inspections, tests, balancing, sterilization and cleaning of plumbing and HVAC systems, electrical power and signal systems, and conveying (elevator) systems.

H. Notice of Completion: University will record the Notice of Completion with County Recorder, when the Project is complete in all respects.

1.7 FINAL COMPLETION SUBMITTALS

A. Final Completion Submittals: Prior to application for Final Payment, Contractor shall submit the following:

B. Agency Document Submittals: Contractor shall submit to University all documents required by authorities having jurisdiction, including serving utilities and other agencies. Contractor shall submit original versions of all permit cards, with final sign-off by inspectors. Submit all certifications of inspections and tests.

C. Final Specifications Submittals: Contractor shall submit to University all documents and products required by Specifications to be submitted, including the following:
1. Project record drawings and specifications.
2. Operating and maintenance data.
3. Guarantees, warranties and bonds.
4. Keys and keying schedule.
5. Spare parts and extra stock.
6. Test reports and certificates of compliance.

D. Certificates of Compliance and Test Report Submittals: Contractor shall submit to University's Representative certificates and reports as specified and as required by authorities having jurisdiction, including but not limited to the following, as applicable:
1. Sterilization of water systems.
2. Sanitary sewer system tests.
3. Gas system tests.

4. Lighting, power and signal system tests.
5. Ventilation equipment and air balance tests.
6. Fire sprinkler system tests.
7. Roofing inspections and tests.

E. Subcontractors List: Contractor shall submit final Subcontractor and Materials Supplier List.

F. Warranty Documents: Contractor shall prepare and submit to University all warranties and bonds as specified in Section 01 78 50 - Product Warranties and Bonds.

1.8 FINAL PAYMENT

A. Final Payment: After completion of all items listed for completion and correction and after submission of all documents and products and after final cleaning, Contractor shall submit final Application for Payment, identifying total adjusted Contract Sum, previous payments and sum remaining due. Payment will not be made until the following are accomplished, as well as all other conditions of the Contract:
   1. All Project Record Documents have been received and accepted by the University.
   2. All extra materials and stock items have been transferred to and accepted by University.
   3. All warranty documents and operation, maintenance data, service agreements, maintenance contracts and salvage materials have been received and accepted by University.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 78 30: OPERATION AND MAINTENANCE MANUALS

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. Format and content, and submission requirements for operation and maintenance manuals.

1.3 RELATED SECTIONS

A. Section 01 45 00 - Quality Control: Manufacturer's instructions; test and balance reports.
B. Section 01 77 00 - Contract Closeout Procedures: Contract closeout procedures.
C. Section 01 78 50 - Product Warranties and Bonds: Requirements for warranties and bonds.
D. Section 01 78 90 - Project Record Documents: Submission of Project record documents.
E. Section 01 82 00 – Demonstration and Training: Coordinate manuals for training sessions.

1.4 QUALITY ASSURANCE

A. Ensure that data is arcuate and in conformance with the manufacturer’s recommendations and applicable regulations for the types of products, systems, and equipment.

1.5 SUBMITTALS

A. Operation and Maintenance Manuals: Contractor shall develop and submit Operation and Maintenance Manuals for all products, assembly of products, materials, systems, and equipment used in the Project.
A. Submittal Due: Schedule submission of Manuals to allow sufficient time for receipt, review and acceptance of instruction program by the Architect and University plus a minimum of two additional weeks prior to proposed date of first Demonstration and Training session. Show the proposed submittal dates in the Submittals Schedule, and coordinate with the Construction Schedule.
B. Submittal shall follow the general requirements in accordance with Section 01 33 00 Submittal Procedures as well as the specific requirements included in this Section.

1.6 FORMAT AND CONTENT OF OPERATION AND MAINTENANCE MANUALS

A. Format for Operation and Maintenance Manual Submittal: Organize operation and maintenance data as PDFs with file names to match the Section number and title for digital submission. Include the Table of Contents file and transmittal sheet. Also submit two matching hard-copies of the Operation and Maintenance Manuals submittal in three-ring binders and organize the contents of each binder following the organization of the Contract Specifications.

B. Operation and Maintenance Manual Organization:
   1. Organize the PDF files and contents of individual binders in sequence according to the Section numbers and titles as listed in the Table of Contents of this Project Manual. Number the binders consecutively; coordinate with Paragraph below titled "Tables of Contents."
   2. Organize each distinct product and system shall be in a single PDF with the file name matching the relevant Section number and name identifying the product or system. In the

printed manuals, each of these sections shall be separated in the three-ring binders by dividers with typed inserts or sticker labels on tabs identifying the product or system.

3. If the products of more than one Specification Section are included in the binder, provide separate, heavy cover stock dividers to separate information for each Section.

C. Binders: Use 8-1/2 x 11 inch, standard three-ring binders with heavy duty vinyl covers with hard cardboard backing, black color, with provision on binder spine for inserting identification card; Maximum binder ring size shall be three inches. Use multiple binders as necessary to avoid overfilling. When multiple binders are used, correlate data into related consistent groupings.

D. Cover: Contractor shall identify each binder with printed card inserted on binder spine, stating OPERATION AND MAINTENANCE MANUAL, the Project name and the general subject matter of the contents of the binder.

E. Title Page: In each binder include a title page with the following:
1. Name of the Project.
2. Names, addresses and telephone numbers of the Architect and Engineers of record
3. Name, address and telephone numbers of Contractor, including names of contact persons.

F. Table of Contents: In each binder include a listing of the contents of the volume. In a separate, first binder, Contractor shall provide a master Table of Contents of operation and maintenance data, identifying the product and systems, the applicable Specification Section number and title, and the operation and maintenance data binder number.

G. Schedule of Products and Systems: In the first volume of the set of operation and maintenance data, include a schedule of products and systems, indexed to the Table of Contents of the binder and cross-referenced to the Contract Drawings and Specifications.

H. Operation and Maintenance Data: In each tabbed division of operation and maintenance data for each product or system, provide the following:

1. On a cover page for each tabbed division, provide the following:
   a. Identify by name, address and telephone number, the manufacturer, supplier and installer. Include names of contact persons, if known.
   b. Identify by name, address and telephone number, local sources of supplies, replacement parts and factory-authorized service.
2. Within each tabbed division, include complete operation and maintenance data as published by the product manufacturer where feasible. Otherwise, present all data neatly typewritten on 20 pound, correspondence quality bond paper. Contractor shall strike-through information on printed literature where not applicable and circle information that is applicable and critical.
3. Contractor shall supplement the manufacturer's printed data with neatly typewritten text and professionally drafted diagrams as necessary to suit the particular installation for the Project and to fully explain operation and maintenance procedures.

I. Drawings: Contractor shall supplement operation and maintenance data to illustrate configurations and relationships of component parts of equipment and systems, and to show control and flow diagrams, as applicable to the actual installation conditions for this particular Project.

J. Warranty and Guaranty: Include copy of each warranty, and any guaranty, bond and service contract issued. Provide information sheet identifying:
1. Proper procedures in event of failure.
2. Instances that might affect validity of warranties or bonds.

K. Material Safety Data Sheet (MSDS): For products requiring MSDS, according to CCR Title 8 and the University policy, Contractor shall include copy of each applicable Material Safety Data Sheet (MSDS) for products delivered to the site and incorporated into the completed construction.

1.7 MANUAL REQUIREMENTS FOR MATERIALS AND FINISHES

A. Manual requirements for Building Products, Applied Materials and Finishes: Include product data, with catalog number, size, composition, and color and texture designations.

B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

C. Data for Moisture Protection and Weather-Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.

D. Additional Requirements: As specified in individual product Specification Sections.

1.8 MANUAL REQUIREMENTS FOR EQUIPMENT AND OPERATING SYSTEMS

A. Manual requirements for Equipment and Operating Systems:
1. Include manufacturer's printed operation and maintenance instructions.
2. Identify function, normal operating characteristics and limiting conditions.
3. Include performance curves, with engineering data and tests.
4. Include sequence of operation by controls manufacturer, as applicable.
5. Provide diagrams by controls manufacturer for control systems, as applicable and as installed.

B. Piping Data: Provide Contractor's coordination drawings, with piping diagrams as installed. Contractor shall provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams. Color code diagrams as necessary for clarity.

C. Reports: Include test and balancing reports per individual product Specification Sections.

D. Panelboard Circuit Directories: Electrical service characteristics, controls and communications.

E. Wiring Diagrams: Include diagrams of wiring as installed, with color coding as necessary for clarity.

F. Operating Procedures:
1. Start-up, break-in, and routine normal operating instructions and sequences.
2. Regulation, control, stopping, shut-down, and emergency instructions.
3. Summer and winter operating instructions.
4. Special operating instructions.

G. Maintenance Requirements:
1. Routine maintenance procedures and guide for trouble-shooting.
2. Disassembly, repair, and reassembly instructions.
3. Alignment, adjusting, balancing, and checking instructions.

H. Servicing and Lubrication: Provide servicing and lubrication schedule, and list of lubricant products.

I. Parts Data: Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams as necessary for service and maintenance.

1. Include complete nomenclature and catalog numbers for consumable and replacement parts.
2. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in stock by the University.

J. Software: Provide all programming codes, access codes and other data necessary for operation, maintenance, future functioning and modifications of microprocessor-controlled products, independent of Original Equipment Manufacturer (OEM).

K. Additional Requirements: As specified in individual product Specification Sections.

1.9 MANUAL REQUIREMENTS FOR ELECTRIC AND ELECTRONIC SYSTEMS

A. Manual requirements for Electrical and Electronic Systems: Provide description of each system and component parts, including:
1. Function, normal operating characteristics and limiting conditions.
2. Performance curves, engineering data and tests.
3. Complete nomenclature and commercial number of replaceable parts.

B. Circuit Directories of Panel Boards: Electrical service, Controls, and Communications.

C. Wiring Diagrams: As-installed, color-coded wiring diagrams.

D. Operating procedures:
1. Routine and normal operating instructions.
2. Sequences required.
3. Special operating instructions.

E. Maintenance procedures:
1. Routine operations.
2. Guide to "trouble-shooting."
3. Disassembly, repair and reassembly.
4. Adjustment and checking.

F. Provide Manufacturer's printed operating and maintenance instructions.

G. Provide list of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

H. Contractor shall prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel.

I. Additional requirements for operating and maintenance data: Respective sections of specifications.

1.10 INSTRUCTION OF UNIVERSITY'S PERSONNEL

A. Coordinate with requirements specified in Section 01 82 00 - Demonstration and Training.

PART 2 – PRODUCTS (Not used)
PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 78 50: 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 01 33 00 - Submittals Procedures: General administrative requirements for submittals, applicable to warranties and bonds.

B. Section 01 77 00 - Contract Closeout Procedures: General requirements for closeout of the Contract.

C. Section 01 78 30 - Operation and Maintenance Data: Operating and maintenance data binders, to include copies of warranties and bonds.

D. 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. See Contract General Conditions article 39.06 for additional requirements.

B. Provisions for Special Warranties: Refer to Contract General Conditions for terms of the Contractor's special warranty of workmanship and materials.

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 all Divisions 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 may included in the Contract Documents, or will be provided directly by the University. Contractor shall submit the warranty package submittal to the University, with a copy to the University Representative, for review and approval. Contractor shall:
   1. Refer to product Specifications Sections of all Divisions 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.
   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 University 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 University 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 electronic PDF files and one printed original hard-copy binder set and submit to the University for review and acceptance.
   1. Prior to submission, verify documents are in proper form, 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 both electronic PDF and printed binder copy, 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 in Section 01 78 30 - Operation and Maintenance Manuals.

1.8 TIME OF WARRANTY AND BOND SUBMITTALS

A. Submission of Preliminary Copies: Unless otherwise specified, Contractor shall obtain preliminary copies of warranties, guaranties and bonds within ten days of completion of applicable Work.

B. Submission of Final Copies: Contractor shall submit fully executed copies of warranties, guaranties and bonds prior to Notice of Completion.

C. 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.

D. 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 all Divisions of the Project Manual for extended warranty and guaranty beyond the minimum one-year duration.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 78 90: PROJECT RECORD DOCUMENTS

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 Project Record Documents to be submitted for Contract closeout.

1.3 RELATED SECTIONS

A. Section 01 33 00 - Submittals Procedures: General requirements for submission for shop drawings, product data, samples and quality control reports.

1.4 SUBMITTALS

A. Project Record Documents: Submit hard-copy and electronically scanned PDF complete set of all Project Record Documents including: Record Drawings, Record Specifications, Record Product Data, and other record documents.
   1. Due:
      a. Review drafts in-progress at each Construction Progress Meeting.
      b. Submit final Record Documents prior to Project Completion.

1.5 PROJECT RECORD DOCUMENTS

A. Maintain and protect Record Documents from deterioration and loss in a secure, fire-resistive location; provide access for University and the Architect's reference during normal working hours. Store Record Documents separately from documents used for construction.

B. Record Drawings: Contractor shall record information continuously as Work progresses. In addition to the requirements for inspections and approvals, Contractor shall not conceal Work until all required information is recorded.
   1. Maintain a clean, undamaged set of Contract Drawings, Shop Drawings, and Coordination Drawings. Mark the set to show the actual installation (aka “as-built”) where the installation varies from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately, and mark other drawings to provide complete record. This record may be maintained either in hard-copy format using erasable red-colored pencil, or in electronic format as PDF file mark-ups using Adobe Acrobat Pro. If maintained in hard-copy, it will be required to be scanned for final submittal.
   2. Where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
   3. Mark new information that is important to the University, but was not shown on Contract Drawings or Shop Drawings. Record actual construction, including:
      a. Measured depths of foundations and footings encountered or constructed, measured in relation to finish First Floor datum or approved survey benchmark.
      b. Measured horizontal and vertical locations of underground utilities and appurtenances,

referenced to permanent ground improvements.
c. Field changes of dimension and detail.
d. Details not on original Contract Drawings. Application of copies of details produced and provided by Architect during construction will be accepted.
e. Permanent Room names and Room numbers where different than the original drawings.
4. Note/tag Change Order & RFI numbers where related to the applicable areas of the drawings.
5. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
6. Verify Record Drawings are being adequately maintained throughout the course of construction. Note this is an agenda item for each Construction Progress Meeting per Section 01 31 20 Project Meetings.

C. Record Specifications: Contractor shall record changes made by Addenda, Change Orders, as well as responses to Submittals, Substitution Requests, and RFI's as applicable to each Specification Section contained in this Project Manual. This record may be maintained either in hard-copy format using erasable red-colored pencil, or in electronic format as PDF file mark-ups using Adobe Acrobat Pro. If maintained in hard-copy, it will be required to be scanned for final submittal.
1. Manufacturer's name and product model or catalog number.
2. Product substitutions or alternates utilized.
3. Verify Record Specifications are being adequately maintained throughout the course of construction. Note this is an agenda item for each Construction Progress Meeting per Section 01 31 20 Project Meetings.

D. Record Product Data: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in the approved Product Data submittal. This record may be maintained either in hard-copy format using erasable red-colored pencil, or in electronic format as PDF file mark-ups using Adobe Acrobat Pro. If maintained in hard-copy, it will be required to be scanned for final submittal.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Verify Record Product Data are being adequately maintained throughout the course of construction. Note this is an agenda item for each Construction Progress Meeting per Section 01 31 20 Project Meetings.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION (Not used)

END OF SECTION

SECTION 01 82 00: 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 demonstration and training of operation and maintenance of all systems, subsystems and equipment installed under the Contract.

1.3 RELATED SECTIONS

A. Section 01 78 30 - Operation and Maintenance Manuals: Operating and maintenance instructions to be used during training and demonstration.

1.4 SUBMITTALS

A. Demonstration and Training Program:
   1. Contractor shall develop and submit Demonstration and Training Program, beginning with a summarized schedule of proposed dates, times, length of instruction time, and instructor's names for each training module. Follow with an outline format of the instructional program, including learning objectives and content described below.
   2. Submittal Due: Schedule submission of Program to allow sufficient time for receipt, review and acceptance of instruction program by the Architect and University plus a minimum of two additional weeks prior to proposed date of first training session. Show the proposed submittal dates in the Submittals Schedule, and coordinate with the Construction Schedule. The Demonstration and Training modules are encouraged to be scheduled as early as practical after the related Work is tested, adjusted, complete, and fully operational in order to not cause delay in the progress of the Work or the closeout of the Project.
   3. Demonstration and Training Program submittal shall follow the general requirements in accordance with Section 01 33 00 Submittal Procedures.

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.

C. Attendance Record: For each training module, submit list of participants and length of instruction.

D. Demonstration and Training Video Record: Submit electronic file of video of each training session.

1.5 QUALITY ASSURANCE

A. Instructor Qualifications: Contractor shall engage qualified instructors to instruct University's personnel how to adjust, operate, and maintain systems, subsystems, and equipment. Instructors shall be authorized service representatives, complying with Section 01 45 00 - Quality Control.

B. Pre-Instruction Conferences: During pre-installation conferences as specified in Section 01 31 00 – Project Coordination, review methods and procedures related to demonstration and training.

1.6 COORDINATION

A. Coordination of Instruction Schedule: Coordinate instruction schedule with University's operations. Contractor shall adjust schedule as required to minimize disrupting University's operations.

B. Coordinate content of training modules with content of approved emergency, operation, and maintenance manual in accordance with Section 01 78 30 - Operation and Maintenance Manuals.

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 as part of the Project. Include instruction on operational interfaces between systems.

B. Schedule of Training Sessions: Contractor shall arrange to have training conducted with no more than four 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 a classroom type environment and at specific location of subject equipment or system as appropriate. 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.

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 deficiencies.

5. Corrective Maintenance:

a. List possible problems and discuss repairs.
b. 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 and recommendations for additional parts that should be stocked.

7. Local Representatives:
   a. Where to order parts: Name, address, and telephone of at least one source.
   b. Service problems:
      1) At least one service provider for service, including name, address, and telephone.
      2) Who to contact for emergency service, where different than general service issues.

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. 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 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 purpose, 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, 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 or similar software. Graphics shall include text and images.
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. Submit electronic copy of all presentation media in their original native software format as well as in PDF file type for the project records.

I. Video Record: Each training session shall be recorded in a digital video/audio format.

PART 3 - EXECUTION

3.1 INSTRUCTION

A. Preparation:
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. Training Sessions: Conduct classroom and field training sessions presenting content specified in Article 2.1, titled "Instruction Program," above. Handing out the Operations and Maintenance manual and soliciting questions from the trainees does not constitute training.

D. Demonstration and Training Video: Contractor shall provide recording of training sessions. Digital video material shall be to provide a permanent record for use by University.
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 video, record the printed title sheet summary of the training module, including the learning objective and lesson outline.

C. Cleanup:
1. Collect used and leftover educational materials and deliver to University as requested.
2. Remove instructional equipment.
3. Restore systems and equipment to regular operating condition.

END OF SECTION

SECTION 07 84 13 – THROUGH PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

A. Related Documents:

1. Drawings and general provisions of the Contract apply to this Section.

2. Review these documents for coordination with additional requirements and information that apply to work under this Section.

B. Section Includes:

1. Penetrations through fire-resistance-rated vertical assemblies.

2. Penetrations through fire-resistance-rated horizontal assemblies.

1.2 RELATED SECTIONS:

A. Project Specifications

1. Division 1 – General Requirements

2. Section 28 31 00 – Fire Detection and Alarm

1.3 REFERENCED STANDARDS

A. General:

1. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.

2. Refer to Division 1 "General Requirements" for the list of applicable regulatory requirements.

B. California Code of Regulations, Title 24, Part 2, California Building Code (CBC), 2016 Edition

C. California Code of Regulations, Title 24, Part 3, California Electrical Code (CEC), 2016 Edition

D. California Code of Regulations, Title 24, Part 9, California Fire Code (CFC), 2016 Edition.

E. NICET – National Institute for Certification in Engineering Technologies

F. ADA - Americans with Disabilities Act.

G. UL - Underwriters Laboratories, Inc.

H. FM - Factory Mutual System.

I. ASTM – American Society for Testing and Materials

1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

2. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

3. ASTM E 814 - Standard Test Method for Fire Tests of Through-Penetration Firestops.

4. ASTM E 2174 - Standard Practice for On-Site Inspection of Installed Firestops.

J. ANSI - American National Standards Institute.

1. ANSI/UL 263 - Fire Tests of Building Construction and Materials.

2. ANSI/UL 723 - Surface Burning Characteristics of Building Materials.

3. ANSI/UL 1479 - Standard for Fire Tests of Through-Penetration Firestops.

1.4 PERFORMANCE REQUIREMENTS

A. Provide systems that are listed by at least one the following:

1. Underwriters Laboratories Inc. (UL), in "Fire Resistance Directory".

2. Intertek Testing Service (Formerly known as Omega Point Laboratories), in "Directory of Listed Products".

3. Factory Mutual (FM), in FMRC Approval Guide.

4. Any other qualified independent testing and inspection agency that conducts periodic follow-up inspections and is acceptable to authorities having jurisdiction.

B. Provide firestop products that are flexible enough to allow for pipe vibration in a through penetration application.

C. Provide products with the appropriate flame spread index and smoke develop index, when tested in accordance with ASTM E 84.

D. Provide products identical to those tested and listed for classification by UL, Intertek or any other qualified independent testing agency.

E. Provide products that bear classification marking of qualified independent testing agency.

F. Where firestop systems not listed by any listing agency are required due to project conditions, submit a substitution proposal with evidence specified.

G. Use only products specifically listed for use in listed systems.

H. Provide products that are compatible with each other, with the substrates forming openings, and with the items, if any, penetrating the firestopping, under the conditions represented by this project, based on testing and field performance demonstrated by manufacturer.

I. Firestopping materials must meet and be acceptable for use by all applicable codes cited in this section.

J. Provide products that meet the intent of the state or local and LEED ® guidelines on volatile organic compounds (VOC).

K. Where applicable provide products that meet the intent of the F rating classification for passage of flame per ASTM E 814 or ANSI/UL 1479 for through penetrations.

L. Where applicable provide products that meet the intent of the T rating classification for the transfer of temperature per ASTM E 814 or ANSI/UL 1479 for through penetrations.

M. Where applicable provide systems that meet the intent of the L rating classification for the movement of smoke per ANSI/UL 1479 for through penetrations.

N. Where applicable provide products that meet the intent of the W rating classification for passage of water per ANSI/UL 1479 for through penetrations.

1.5 QUALITY ASSURANCE

A. General: All through-penetration firestop systems shall be installed with approved methods using materials that have been tested and classified to produce an approved assembly.

B. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of twenty five (25) years experience in passive fire protection.

1. Products shall be manufactured in a facility that follows ISO 9001 best practices.

2. Products shall have undergone a formal life cycle assessment evaluating environmental impact.

C. Installer Qualifications: Firm must be qualified by having experience, staff, and be properly trained to install the specified products, and meets the following criteria:

1. Contractor has completed the manufacturer's certified product installation training.

2. Contractor must provide a list of completed projects as evidence of experience; include project name and address, owner's name and address, and architect's name and phone number.

3. Certificate: Contractor should provide certificate of qualification.

D. Codes: Where manufacturer's application procedures are in conflict with those of the local Authority Having Jurisdiction, the more strict guidelines will prevail.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products until ready for installation in manufacturer's original unopened packaging, legibly marked with manufacturer's name and product identification, date of manufacture, lot number, listing agency's classification marking, curing/dry time, and mixing instructions (if applicable) and MSDS reference number.

B. Store and handle in such a manner as to prevent deterioration or damage due to moisture, temperature changes, contaminants, and other causes; follow manufacturer's instructions.

1.7 WORK INCLUDED

A. Where provisions of the referenced Codes and Standards are repeated in this Specification, it is intended only to call attention to them. It is not intended that other parts of the referenced Codes and Standards shall be assumed to be omitted if not repeated in this Specification.

B. In general, work shall include, but not be limited to:

1. Provide and install fire rated through penetration sealants for electrical raceway (conduit) as necessary and required at fire rated wall and floor/ceiling assemblies.

1.8 SUBMITTALS

A. Submit under provisions of the Contract and Division 01 – General Requirements.

B. Shop Drawings: For each firestopping system, provide the following:

1. Listing agency's detailed drawing showing opening, penetrating item(s), and firestopping materials, identified with listing agency's name and number or designation and fire rating achieved.

2. For proposed systems that do not conform strictly to the listing, submit written instructions showing modifications and approved by firestop system manufacturer.

C. Product Certificates: Submit certificates of conformance signed by firestop system manufacturer certifying that materials furnished comply with requirements.

D. Product Data: Furnish manufacturer's product data sheets on each material to be used in firestop systems. Information on manufacturer's product data sheet should include:

1. Product characteristics including compliance with appropriate ASTM/UL/ANSI test standards.

2. Storage and handling requirements and recommendations.

E. Installation Instruction: Furnish manufacturer's installation instructions.

F. Sustainable or LEED Submittals:

1. VOC Content: For sealants and sealant primers, furnish documentation of VOC content.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. Products described below and identified by product name, model number, or other manufacturer designation, are Basis of Design Products. Basis of Design Products establish the standards of type, function, dimension, in-service performance, physical properties, appearance, warranty, cost, and other characteristics required by the Project. The Project’s design is based on the Basis-of-Design Products specified.

2. Products of manufacturers not listed may be proposed for substitution, provided they are comparable to the products specified.

a. If “No substitutions” is indicated next to the product name, provide only products of listed manufacturers.

b. The burden of proof of equality of proposed products is on the Contractor.

B. 3M Fire Protection Products, or approved equal.

C. To maintain control and integrity of the firestop applications a single manufacturer should be used. Specific UL or approved listing agencies systems applicable to each type of firestop condition should be supplied by one manufacturer.

2.2 SCOPE/APPLICATION

A. Provide installed firestop products that limit the spread of fire, heat, smoke, and gasses through otherwise unprotected openings in rated assemblies, including walls, partitions, floors, roof/ceilings, and similar locations, restoring the integrity of the fire rated construction to its original fire rating.

B. Provide firestop systems listed for the specific combination of fire-rated construction, type of penetrating item, annular space requirements, and fire rating, and the following criteria:

1. F-Rating: Equal to or greater than the fire-resistance rating of the assembly in which the firestopping will be installed.

2. T-Rating: In habitable areas where penetrating items are exposed to potential contact with materials on exposed side(s) of rated assembly, T-rating must equal its F-rating.

3. Wall Penetrations: Through penetration systems must be symmetrical, with the same rating from both sides of the wall. Membrane penetrations may be asymmetrical.

4. Testing: Determine ratings in accordance with ASTM E 814 or UL 1479.

2.3 THROUGH PENETRATION FIRESTOP PRODUCTS

A. 3M Fire Barrier CP25WB+ Sealant: High-performance, intumescent, water-based sealant. No-sag, fast drying, paintable, red in color. Versatile firestop sealant for pipes (not for use with CPVC), cables, cable tray, blank opening and other penetrations along with mineral wool or other fire-rated assembly products.

1. Fire Resistance: For use in 1, 2, 3 or 4 hour fire-rated systems.

2. Locations: Vertical assemblies, horizontal assemblies and smoke barrier.

3. STC rating of 54 when tested in STC 54-rated wall assembly.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. Conduct tests according to manufacturer's written recommendations to verify that substrates are free of oil, grease, rolling compounds, incompatible primers, loose mill scale, dirt and other foreign substances capable of impairing bond of firestopping.

C. Verify that items penetrating fire rated assemblies are securely attached, including sleeves, supports, hangers, and clips.

D. Verify that openings and adjacent areas are not obstructed by construction that would interfere with installation of firestopping, including ducts, piping, equipment, and other suspended construction.

E. Verify that environmental conditions are safe and suitable for installation of firestopping.

F. If substrate preparation is the responsibility of another installer, notify Architect or Engineer of Record of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Prepare substrates in accordance with manufacturer's instructions and recommendations.

B. Install masking and temporary coverings as required to prevent contamination or defacement of adjacent surfaces due to firestopping installation.

3.3 INSTALLATION

A. Install in strict accordance with manufacturer's detailed installation instructions and procedures.

B. Install so that openings are completely filled and material is securely adhered.

C. Where firestopping surface will be exposed to view, finish to a smooth, uniform surface flush with adjacent surfaces.

D. After installation is complete, remove combustible forming materials and accessories that are not part of the listed system.

E. Repair or replace defective installations in accordance with manufacturer’s recommendations, listed systems details and applicable code requirements.

F. At each through penetration, attach identification labels on both sides in location where label will be visible to anyone seeking to remove penetrating items or firestopping.

G. Clean firestop materials off surfaces adjacent to openings as work progresses, using methods and cleaning materials approved in writing by firestop system manufacturer and which will not damage the surfaces being cleaned.

H. Notify the University when firestopping installation is ready for inspection; obtain advance approval of anticipated inspection dates and phasing, if any, required to allow subsequent construction to proceed.

I. Do not cover firestopping with other construction until approval of authority having jurisdiction has been received.

3.4 FIELD QUALITY CONTROL

A. Notify the University at least 7 days prior to date when firestopping installation will be ready for inspection; obtain advance approval of general schedule and phasing, if any, required to allow subsequent construction to proceed.

3.5 CLEANING AND PROTECTION

A. Remove left over material and debris from Work area. Use necessary means to protect fire protection product(s) before, during, and after installation.

B. Touch-up, repair or replace damaged products before Substantial Completion.

C. Install identification Labels for Through Penetration: Pressure sensitive self-adhesive vinyl labels, preprinted with the following information:

1. The words "Warning - Through Penetration Firestop System - Do not Disturb. Notify Building Management of Any Damage."

2. Listing agency's system number or designation.

3. System manufacturer's name, address, and phone number.

4. Installer's name, address, and phone number.

5. General contractor's name, address, and phone number (if applicable).

6. Date of installation.

3.6 WARRANTY

A. At project closeout, provide to University an executed copy of the manufacturer's standard limited warranty against manufacturing defect, outlining its terms, conditions, and exclusions from coverage.

END OF SECTION 07 84 13

SECTION 28 31 00 - FIRE DETECTION AND ALARM

PART 1 - GENERAL 1.1

SUMMARY

A. Related Documents:

1. Drawings and general provisions of the Contract apply to this Section.

2. Review these documents for coordination with additional requirements and information that apply to work under this Section.

B. Section Includes:

1. Fire alarm control panel(s).

2. Manual fire alarm stations.

3. Automatic smoke detectors.

4. Automatic heat detectors.

5. Fire alarm occupant notification appliances.

6. Auxiliary fire alarm equipment and initiating devices.

1.2 RELATED SECTIONS:

A. Project Specifications

1. Division 1 – General Requirements

2. Section 26 – Low Voltage Electrical Power Conductors and Cables.

3. Section 26 – Raceway and Boxes for Electrical Systems.

4. Section 26 – Identification of Electrical Systems.

1.3 REFERENCED STANDARDS

A. General:

1. Unless otherwise noted, the referenced standard edition is the current one at the time of commencement of the Work.

2. Refer to Division 1 "General Requirements" for the list of applicable regulatory requirements.

B. NFPA 70 - National Electrical Code, amended to form the California Electrical Code.

C. NFPA 72 - National Fire Alarm and Signaling Code, as amended by the State of California

D. NICET – National Institute for Certification in Engineering Technologies

E. ADA - Americans with Disabilities Act.

F. UL - Underwriters Laboratories, Inc.

G. FM - Factory Mutual System.

H. ANSI - American National Standards Institute.

I. California Code of Regulations, Title 24, Part 9, California Fire Code.

J. California Code of Regulations, Title 24, Part 3, California Electrical Code.

K. California State Fire Marshal's Building Equipment List.

1.4 SCOPE

A. This Project provides a replacement fire alarm system for the existing residence halls at Humboldt State University. The Project also includes, but is not limited to:

1. A new fire alarm control unit, and all ancillary equipment necessary for a complete and functioning system shall be provided for each of the Buildings. The fire alarm control unit shall be connected to fiber optic cable and be capable of networking with compatible fire alarm control units at remote locations and with the fire alarm receiver on Campus.

2. The provision and installation of all ancillary and associated equipment, devices, wiring and cabling and all programming necessary for the complete system operation.

3. All system testing.

4. Demolition, removal, and disposal of the existing fire alarm devices, appliances, and equipment following acceptance of the new system installation.

B. The operation of individual sounding bases located within residential dwelling rooms and/or suites is to be accomplished using programmed alarm zones in the control unit and remote Notifier power supplies, dedicated to power the sounder bases located within residential dwelling rooms and/or suites (as applicable).

C. The fire alarm system installation shall provide detection for only those areas shown in the Drawings and shall include a complete occupant notification alarm system (using temporal Code 3 horns as required by the CBC/CFC).

D. The Drawings are diagrammatic in that the exact device, appliance, and equipment locations, conduit and raceway routing, raceway supports, and construction details for the replacement fire alarm system shall be developed by the Contractor based on field investigation and conditions. The riser diagrams are diagrammatic and represent feasible connectivity.

E. The Contractor may modify the connectivity to suit field conditions provided that the notification appliance and signaling line circuit loads do not exceed those specified in the listings and approvals for each manufacturer's piece of equipment.

1.5 QUALITY ASSURANCE

A. Every component of the fire alarm system shall be listed by the California Department of Forestry & Fire Protection Office of the State Fire Marshal (CSFM).

B. The fire alarm system supplier (FASS) shall be a “Notifier” Installer engaged in the design and the installation of fire alarm systems and their related subsystems. For the purposes of this Section, an Installer shall be interpreted to mean an organization that complies with all of the following criteria:

1. Employs a registered fire protection engineer or NICET Level IV to supervise or perform the work required by this specification section.

2. Employs personnel on this project who have successfully completed the manufacturer’s training courses on the specific fire alarm equipment provided for the installation.

3. Has performed work (including design, installation, startup, testing and maintenance) on at least five previous projects of similar or greater complexity.

4. Has been actively engaged in the type of work specified in this section for a minimum of five years.

5. See Article 1.11 for Installer qualifications.

C. Each and all items of the fire alarm system shall be listed as a product of a single fire alarm system manufacturer under the appropriate category by Underwriters’ Laboratories, Inc. (UL), and shall bear the corresponding “U.L.” label.

1.6 WORK INCLUDED

A. Where provisions of the referenced Codes and Standards are repeated in this Specification, it is intended only to call attention to them. It is not intended that other parts of the referenced Codes and Standards shall be assumed to be omitted if not repeated in this Specification.

B. The system installation includes those items identified in the Contract Documents and the necessary and appropriate ancillary equipment incidental to the system operation.

C. It is the intent of these specifications to describe the complete fire alarm system. The Contractor is responsible for carefully and critically reviewing the Contract Drawings, specifications, and site conditions to the extent practicable. Any error, omission, discrepancy or lack of clarity shall be promptly communicated to the Engineer.

D. In general, work shall include, but not be limited to:

1. Provide and install a fire alarm system for the protection of the buildings, as shown on the Contract Drawings. Development of shop drawings and equipment submittals for review and acceptance by the Engineer and the University.

2. Provide all equipment necessary for initiating devices, occupant notification appliances, communication of signals to the “Notifier” fire alarm control unit located at the Campus receiver and system display.

3. Provide all design, calculations, details and software required to install the fire alarm system as indicated in the Contract Drawings and project specifications.

4. Provide all penetrations through walls, floors and ceilings necessary for the installation of the fire alarm system. Provide fire stopping as required.

5. Perform systems and device testing as required by the Authority Having Jurisdiction and the project specifications. Obtain final approval from the Authority Having Jurisdiction.

6. Perform training and provide the Manufacturer's Certification for the University's personnel.

7. Demolish, remove and dispose of equipment associated with the replaced fire alarm system.

8. Patch, repair and paint damage caused by the installation and demolition.

1.7 GENERAL REQUIREMENTS AND OPERATION

A. Provide intelligent, electrically supervised, manual and automatic, fire alarm and detection systems, including proprietary and local alarm panels, and occupant notification appliances.

B. Occupant notification shall be the uniform alarm code (3 beats, pause, 3 beats) in accordance with the Fire Code. Any fire alarm signal shall also cause an alarm signal to be transmitted via the network to the Campus receiver.

C. Occupant notification within the residential dwelling rooms and/or suites shall be accomplished using sounder bases.

D. Visual occupant notification within residential dwelling rooms and/or suites designated/shown for accessibility shall be accomplished using strobes. Strobes in sleeping areas shall be 177 candela.

E. Power supplies: Adequate to serve control panel modules, remote detectors, remote annunciators, door holders, smoke dampers, relays, alarm notification appliances, and other appurtenances as specified.

1. Unless an existing spare/dedicated circuit is available, the Contractor shall provide and install a dedicated circuit of at least 20 Amp service, 120 VAC power (and conduit) from the electrical service in the building to the control unit and any other ancillary fire alarm equipment.

2. The Fire Alarm Control Unit and supporting device shall have sufficient electrical capability and enclosure space to handle the following:

a. 15% increase in the number of smoke detectors on the SLC loop.

b. 15% increase in the number of occupant notification appliances on each circuit.

c. 15% increase in the number of occupant notification appliance circuits.

3. Battery-operated emergency power supplies shall be furnished, and sized with minimum 25% additional capacity than what is required for the operating system in standby mode for minimum of 24 hours followed by alarm notification mode for 5 minutes.

F. System Supervision: Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded onto NFPA Class B Signaling Line Circuit (SLC) alarm signals arriving at the fire alarm control unit shall not be lost following a power failure (or outage) until the alarm signal is processed and recorded.

G. Initiating Device Circuits (IDC): Supervised zone module with alarm and trouble indication; occurrence of an open condition shall place the circuit in trouble mode but shall not disable that circuit from initiating an alarm. Initiating device circuits shall be provided with NFPA Class B wiring.

H. Occupant Notification Appliance Circuits: Supervised signal modules, sufficient for the indication/notification appliances connected to system; occurrence of an open or ground fault

condition shall place the circuit in trouble mode but shall not disable any device on that circuit from signaling an alarm. Indicating appliance circuits shall NFPA Class B wiring.

I. Auxiliary Relays: Provide sufficient double throw auxiliary relay contacts for each accessory function shown and as specified.

J. Provide TROUBLE ACKNOWLEDGE, ALARM SILENCE, BELL AND ANCILLARY FUNCTION DISCONNECT switches at the fire alarm control unit for the testing, as required and shown in the drawings.

K. Trouble Sequence of Operation: System or circuit trouble shall place the system in the trouble mode, which shall cause the following system operations:

1. Visual and audible trouble alarm indicated by address at the fire alarm control panel.

2. Communicate the location of the alarm address and type of device to the Campus receiver via “Notifier’s” protocol.

3. The manual acknowledge function at the fire alarm control panel shall silence the audible trouble alarm; visual alarm shall continue to be displayed and notification shall be maintained until initiating device failure or circuit trouble is cleared.

L. Alarm Sequence of Operation: Actuation of initiating device, shall place the circuit in alarm mode, which shall cause the following system operations:

1. Sound and display local fire alarm notification appliances (ceiling and/or wall mounted audible, visual appliances).

2. Indicate location of alarm address and type of device on the fire alarm control unit.

3. Communicate the location of the alarm address and type of device to the Campus receiver via “Notifier’s” protocol.

4. Transmit signal by function to building mechanical systems, as shown and described in the Drawings and project specifications.

5. Alarm silence function at the fire alarm control panel shall silence all audible alarm signaling devices; visual alarm shall continue to be displayed at the local Fire Alarm Control Panel (FACP), and notification via the network shall be maintained until Alarm Reset occurs. Actuation of a second initiating device shall cause the alarm to re-activate in accordance with this section.

M. Alarm Reset: System shall remain in the alarm mode until manually reset with key-accessible reset switch; system shall remain in alarm mode until the initiating appliance(s) and circuit(s) are reset and are out of alarm mode.

N. Lamp Test: Manual lamp test function shall cause alarm indication at each zone at FACP.

O. Addressing: Actual room numbers and/or names will be assigned by the University and shall be shown on the Permit and As-Built Drawings and shall be used in the software address identification.

P. Each panel shall have a minimum of 15% additional space for future expansion.

Q. Each system shall be electrically supervised against open wire, shorts and ground faults in the initiating, and indication/notification circuits.

1.8 SUBMITTALS

A. The Contractor shall furnish all construction drawings in hard copy and AutoCad (Version 2010 or newer) format.

B. Submit five copies of shop drawings and product data. The drawing format for the FACP layouts, general arrangement, and connection diagrams shall conform to the University furnished CADD standards and formatting.

C. Shop Drawings - Drawings shall be stamped by California registered Fire Protection Engineer or NICET Level IV certified individual and shall include:

1. System logic.

2. Control panel general arrangement, and connection wiring with individual wire numbers, and color code. Module legends must show the module type and the zone input and output connections.

3. Layout plan view showing location of initiating devices and notification appliances with zone and device numbers. Conduit size and routing with wire fill must be shown on the same drawing. All conduits and cables shall be labeled and presented in a cable and conduit schedule.

4. Typical connection details for each device to be installed.

5. Nameplate schedules indicating text for annunciation and labeling for all alarm initiating devices, by address.

6. Area coverage drawings with spacing requirements for the initiating, and indicating/notification appliances in accordance with the requirements and criteria specified in the applicable Codes and Standards.

7. Standby Battery size calculations.

8. Provide California State Fire Marshall (CSFM) Listing numbers for all the system components.

D. Product Data: Provide electrical characteristics and inter connection requirements.

E. Reports: A certificate of compliance shall be provided. Provide Certified inspection and test reports and documents to the Engineer as specified in the project specifications and the manufacturer's instructions.

F. Certification of installer training and contractor listing, per Article 1.11.

G. Substitutions: No substitutions of materials, specified in this section, will be allowed without the written approval of the Engineer.

1.9 PROJECT RECORD DOCUMENTS

A. Record and submit actual locations of initiating devices, and indication/notification appliances on the Drawings.

B. Submit copies of record documents that show as-built conditions.

1.10 OPERATION AND MAINTENANCE DATA

A. Submit five (5) copies of bound original Installation, Operating and Maintenance Manuals.

B. Spare Parts List: The supplier shall provide a recommended spare parts list for one year operation, and pricing good for 90 days from date of equipment delivery.

1.11 INSTALLER QUALIFICATIONS

A. As identified under Article 1.5.

B. A company licensed by State of California as a fire alarm installer with a C-10 contractor's license, and specializing in installing the products specified in this specification with a minimum of five years documented experience.

C. Principal fire alarm control unit installation personnel shall have completed the system manufacturer's training courses within the past 5 years on the equipment to be installed and shall submit documentation of such training to the Engineer.

1.12 MANUFACTURER'S FIELD SERVICES

A. As identified under Article 1.5.

B. Include services of Factory or NICET (National Institute for Certification in Engineering Technologies) Certified Technician to supervise installation, adjustments, final connections, and system testing.

C. The Contractor shall include the cost for providing training of University personnel, including the outline of the training program and the number of hours of training time.

1.13 MAINTENANCE SERVICE

A. The equipment and systems Warranty shall include parts, labor and field service, pickup, delivery, and to ensure restoration of the system to normal within 24 hours of notification to the Contractor.

B. Provide test and maintenance service for a period of one year from the date of contract acceptance. Provide a written certified copy of test results to the Engineer within one week after completion of the work.

C. Contractor shall provide an annual maintenance cost for routine services following the expiration of Contract Warranty. The costs shall be itemized, tabulated, and may include annual cost adjustments as needed.

1.14 EXTRA MATERIALS

A. Provide six keys of each type.

B. Provide six spare of each type of automatic smoke detector without base.

C. Provide two (2) copies of programming software for the FACP.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:

1. Products described below and identified by product name, model number, or other manufacturer designation, are Basis of Design Products. Basis of Design Products establish the standards of type, function, dimension, in-service performance, physical properties, appearance, warranty, cost, and other characteristics required by the Project. The Project's design is based on the Basis-of-Design Products specified.

2. Products of manufacturers not listed may be proposed for substitution, provided they are comparable to the products specified.

a. If "No substitutions" is indicated next to the product name, provide only products of listed manufacturers.

b. The burden of proof of equality of proposed products is on the Contractor.

2.2 CONTROL PANELS

A. "Notifier" NFS-320 Fire Alarm Control Panel (FACP), compatible with the fire alarm control units on Campus and the Campus receiver. This FACP is the only unit fully compatible with the Campus receiver and is necessary for the University's operation and maintenance. No substitutions are allowed.

B. FACP shall be provided with a power supply and the necessary and most current firmware, software, and hardware to perform the functions shown in the design. The panel shall be capable of communicating on a fire alarm communications network to signal point-to-point address information, using "Notifier's" protocol. The FACP shall contain a microprocessor based Central Processing Unit (CPU). The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent addressable smoke and thermal (heat) detectors, addressable modules, control circuits, and notification appliance circuits, local and remote operator terminals, printers, annunciators, and other system controlled devices.

C. The FACP shall communicate with and control the intelligent detectors, intelligent manual pull stations, addressable modules, and other system controlled devices. The FACP shall perform the following functions:

1. Supervise and monitor intelligent addressable devices for normal, trouble and alarm conditions.

2. Supervise all occupant notification appliance circuits.

3. Detect the activation of any initiating device, identify the location, and communicate the status of the alarm condition for devices on the circuit. Operate all notification appliances and auxiliary devices as programmed.

4. Visually and audibly annunciate any trouble, supervisory or alarm condition on the panel display.

5. Shall cause for the signals, annunciation and control of HVAC fans and dampers, as indicated in the Drawings.

6. Shall cause for the control of elevator controls, as indicated in the Drawings.

7. Shall cause for the release of held open doors and other protective assemblies, as indicated in the Drawings.

8. The FACP shall feature a text-based user-friendly interface integral with the panel that provides an intuitive guidance program with prompts in English that will allow University operators to interrogate the system for point data without in-depth knowledge of the interface menu hierarchy.

D. The FACP shall have the following software and hardware features:

1. Pre-signal and Positive Alarm Sequence: The system shall provide means to cause alarm signals to only sound in specific areas with a delay of the alarm from 60 to up to 180 seconds after start of alarm processing. In addition, a Positive Alarm Sequence selection shall be available that allows a 15-second time period for acknowledging an alarm signal from a fire detection/initiating device. If the alarm is not acknowledged within 15 seconds, all local and remote outputs shall automatically activate immediately.

2. Smoke Detector Pre-alarm Indication at Control Panel: To obtain early warning of incipient or potential fire conditions, the system shall support a programmable option to determine system response to real-time detector sensing values above the programmed setting. Two levels of Pre-alarm indication shall be available at the control panel: alert and action.

3. Alert: It shall be possible to set individual smoke detectors for pre-programmed pre-alarm thresholds. If the individual threshold is reached, the pre-alarm condition shall be activated.

4. Action: If programmed for Action and the detector reaches a level exceeding the pre-programmed level, the control panel shall indicate an action condition. Sounder bases installed with either heat or smoke detectors shall automatically activate on action Pre-Alarm level, with general evacuation on Alarm level.

5. The system shall support a detector response time of less than 3 seconds.

6. Device Blink Control: Means shall be provided to turn off detector/module LED strobes.

7. NFPA 72 Smoke Detector Sensitivity Test: The system shall provide an automatic smoke detector test function that meets the requirements of NFPA 72.

8. Programmable Trouble Reminder: The system shall provide means to automatically initiate a reminder that troubles exist in the system. The reminder will appear on the system display and (if enabled) will sound a piezo alarm.

9. On-line or Off-line programming: The system shall provide means to allow panel programming either through an off-line software utility program away from the panel or while connected and on-line. The system shall also support upload and download of programmed database and panel executive system program to a Personal Computer/laptop.

10. History Events: The panel shall maintain a history file of the last 4000 events, each with a time and date stamp. History events shall include all alarms, troubles, operator actions, and programming entries. The control panels shall also maintain a 1000 event Alarm History buffer, which consists of the 1000 most recent alarm events from the 4000 event history file.

11. Smoke Control Modes: The system shall provide means to perform FSCS mode Smoke Control to meet NFPA-92A and 90B and HVAC mode to meet NFPA 90A.

12. The system shall provide means for all SLC devices on any SLC loop to be auto programmed into the system by specific address. The system shall recognize specific device type ID's and associate that ID with the corresponding address of the device.

13. Drill: The system shall support means to activate all silenceable fire output circuits in the event of a practice evacuation or "drill". If enabled for local control, the front panel switch shall be held for a minimum of 2 seconds prior to activating the drill function.

14. Passwords and Users: The system shall support two password levels, master and user. Up to 9 user passwords shall be available, each of which may be assigned access to the programming change menus, the alter status menus, or both. Only the master password shall allow access to password change screens.

15. Block Acknowledge: The system shall support a block Acknowledge for Trouble Conditions

16. Sensitivity Adjust: The system shall provide Automatic Detector Sensitivity Adjust based on Occupancy schedules including a Holiday list of up to 15 days.

17. Environmental Drift Control: The system shall provide means for setting Environmental Drift Compensation by device. When a detector accumulates dust in the chamber and reaches an unacceptable level but yet still below the allowed limit, the control panel shall indicate a maintenance alert warning. When the detector accumulates dust in the chamber above the allowed limit, the control panel shall indicate a maintenance urgent warning.

18. Custom Action Messages: The system shall provide means to enter up to 100 custom action messages of up to 160 characters each. It shall be possible to assign any of the 100 messages to any point.

19. Print Functions: The system shall provide means to obtain a variety of reports listing all event, alarm, trouble, supervisory, or security history. Additional reports shall be available for point activation for the last Walk Test performed, detector maintenance report containing the detector maintenance status of each installed addressable detector, all network parameters, all panel settings including broad cast time, event ordering, and block acknowledge, panel timer values for Auto Silence, Silence Inhibit, AC Fail Delay time and if enabled, Proprietary Reminder, and Remote Reminder timers, supervision settings for power supply and printers, all programmed logic equations, all custom action messages, all non-fire and output activations (if pre-programmed for logging) all active points filtered by alarms only, troubles only, supervisory alarms, prealarms, disabled points and activated points, all installed points filtered by SLC points, logic zones, annunciators, releasing zones, special zones, and trouble zones.

20. Local Mode: If communication is lost to the central processor the system shall provide added survivability through the intelligent loop control modules. Inputs from devices connected to the SLC and loop control modules shall activate outputs on the same loop when the inputs and outputs have been set with point programming to participate in local mode or when the type codes are of the same type: that is, an input with a fire alarm type code shall activate an output with a fire alarm type code.

21. Read status preview - enabled and disabled points: Prior to re-enabling points, the system shall inform the user that a disabled device is in the alarm state. This shall provide notice that the device must be reset before the device is enabled thereby avoiding activation of the notification circuits.

22. Custom Graphics: When fitted with an LCD display, the panel shall permit uploading of a custom bit-mapped graphic to the display screen.

23. Tracking/Latching Duct (ion and photo): The system shall support both tracking and latching duct detectors either ion or photo types.

E. Fire Alarm Control Panel Communications

1. The Contractor shall test the complete communications link from the FACP to the Campus receiver and demonstrate that each point is displayed properly.

F. The system shall provide a Type ID called FIRE CONTROL for purposes of air-handling shutdown, which shall be intended to override normal operating automatic functions. Activation of a FIRE CONTROL point shall cause the control panel to (1) initiate the monitor module Control-by-Event, (2) send a message to the panel display, history buffer, installed printer and annunciators, (3) shall light an indicator at the control panel, (4) Shall display ACTIVE as well a display a FIRE CONTROL Type Code and other information specific to the device.

G. A point with a type ID of NON-FIRE shall be available for use for energy management or other non-fire situations. NON-FIRE point operation shall not affect control panel operation nor shall it display a message at the panel LDC. Activation of a NON-FIRE point shall activate control by event logic but shall not cause any indication on the control panel.

H. One-Man Walk Test: The system shall provide both a basic and advanced walk test for testing the entire fire alarm system. The basic walk test shall allow a single operator to run audible tests on the panel. All logic equation automation shall be suspended during the test and while annunciators can be enabled for the test, all shall default to the disabled state. During an advanced walk test, field-supplied output point programming will react to input stimuli such as CBE and logic equations. When points are activated in advanced test mode, each initiating event shall latch the input. The advanced test shall be audible and shall be used for pull station verification, magnet activated tests on input devices, input and output device and wiring operation/verification.

I. Control By Event Functions software functions shall provide means to program a variety of output responses based on various initiating events. The control panel shall operate Control By Event Function through lists of zones. A zone shall become listed when it is added to a point's zone map through point programming. Each input point such as detector, monitor module or panel circuit module shall support listing of up to 10 zones into its programmed zone map.

J. Permitted zone types shall be general zone, releasing zone and special zone. Each output point (control module, panel circuit module) can support a list of up to 10 zones including general zone, logic zone, releasing zone and trouble zone. It shall be possible for output points to be assigned to list general alarm. Non-Alarm or Supervisory points shall not activate the general alarm zone.

K. Central Processing Unit

1. The Central Processing Unit shall communicate with, monitor, and control all other modules within the control panel. Removal, disconnection or failure of any control panel module shall be detected and reported to the system display by the Central Processing Unit.

2. The Central Processing Unit shall contain and execute all control-by-event (including Boolean functions including but not limited to AND, OR, NOT, ANYx, and CROSSZONE) programs for specific action to be taken if an alarm condition is detected by the system. Such control-by-event programs shall be held in non-volatile programmable memory, and shall not be lost with system primary and secondary power failure.

3. The Central Processing Unit shall also provide a real-time clock for time annotation, to the second, of all system events. The time-of-day and date shall not be lost if system primary and secondary power supplies fail.

4. The CPU shall be capable of being programmed on site without requiring the use of any external programming equipment. Systems that require the use of external programmers or change of EPROMs are not acceptable.

5. The CPU shall comply with UL864 standards. The CPU and associated equipment are to be protected so that voltage surges or line transients will not affect them.

6. Each peripheral device connected to the CPU shall be continuously scanned for proper operation. Data transmissions between the CPU and peripheral devices shall be reliable and error free. The transmission scheme used shall employ dual transmission or other equivalent error checking techniques.

7. The CPU shall provide an EIA-232 interface between the fire alarm control panel and the UL Listed Electronic Data Processing (EDP) peripherals.

8. The CPU shall provide two EIA-485 ports for the serial connection to annunciation and control subsystem components.

9. The EIA-232 serial output circuit shall be optically isolated to assure protection from earth ground.

10. The CPU shall provide one high-speed serial connection for support of network communication modules.

11. The CPU shall provide double pole relays for FIRE ALARM, SYSTEM TROUBLE, SUPERVISORY, and SECURITY. The SUPERVISORY relays shall provide selection for additional FIRE ALARM contacts.

12. The EIA-485 interface may be used for network connection to a proprietary-receiving unit.

L. System Display

1. The system display shall provide all the controls and indicators used by the system operator and may also be used to program all system operational parameters.

2. The display assembly shall contain, and display as required, custom alphanumeric labels for all intelligent detectors, addressable modules, and software zones.

3. The system display shall provide a 640-character backlit alphanumeric Liquid Crystal Display (LCD). It shall also provide ten Light-Emitting-Diodes (LEDs) that indicate the status of the following system parameters: AC POWER, FIRE ALARM, PREALARM, SECURITY, SUPERVISORY, SYSTEM TROUBLE, OTHER EVENT, SIGNALS SILENCED, POINT DISABLED, and CPU FAILURE.

4. The system display shall provide a QWERTY style keypad with control capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels with up to ten (one Master and nine User) passwords shall be accessible through the display interface assembly to prevent unauthorized system control or programming.

5. The system display shall include the following operator control switches: ACKNOWLEDGE, SIGNAL SILENCE, RESET, DRILL, and LAMP TEST. Additionally, the display interface shall allow scrolling of events by event type including, FIRE ALARM, SECURITY, SUPERVISORY, TROUBLE, and OTHER EVENTS. A PRINT SCREEN button shall be provided for printing the event currently displayed on the 640-character LCD.

M. Signaling Line Circuit (SLC) Interface

1. The Loop Control Module shall monitor and control a minimum of 318 intelligent addressable devices. This includes 159 intelligent detectors (Ionization, Photoelectric, or Thermal) and 159 monitor or control modules.

2. The Loop Control Module shall contain its own microprocessor and shall be capable of operating in a local/degrade mode (any addressable device input shall be capable of activating any or all addressable device outputs) in the unlikely event of a failure in the main CPU.

3. The SLC interface board shall be able to drive an NFPA Style 6 twisted unshielded circuit up to 12,500 feet in length. The SLC Interface shall also be capable of driving an NFPA Style 6, no twist, no shield circuit for limited distances determined by the manufacturer. In addition, SLC wiring shall meet the listing requirements for it to exit the building or structure. "T"-tapping shall be allowed in either case.

4. The SLC interface board shall receive analog or digital information from all intelligent detectors and shall process this information to determine whether normal, alarm, or trouble conditions exist for that particular device. Each SLC Loop shall be isolated and equipped to annunciate an Earth Fault condition. The SLC interface board software shall include software to automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information may also be used for automatic detector testing and the automatic determination of detector maintenance requirements.

5. The SLC interface shall not require any jumper cuts or address switch settings to initialize operations.

6. The SLC Loop shall be NFPA Class B wiring.

N. Enclosure:

1. The control panel shall be housed in a UL listed cabinet and mounted as specified on the Contract Drawings. Enclosure and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.

2. The back box and door shall be constructed of steel with provisions for electrical conduit connections into the sides, top, and bottom.

3. The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators.

4. The control unit shall be modular in structure for ease of installation, maintenance, and future expansion.

5. The FACP and associated equipment shall be protected from the affects of voltage surges or line transients in accordance with UL864 standards.

6. Each peripheral device connected to the FACP shall be continuously scanned for proper operation. Data transmissions between the FACP and peripheral devices shall be reliable and error free. The transmission scheme used shall employ dual transmission or other equivalent error checking techniques.

7. Each enclosure shall be mounted such that any display or keyboard functions are no higher than 5 ft. 6 in. AFF.

O. FACP Power Supply

1. The Main Power Supply shall operate on 120 VAC, 60 Hz, and shall provide all necessary power for the FACP.

2. External power panels shall be used to power the occupant notification appliances (strobes) for the AMC facilities.

3. It shall provide a battery charger for 24 hours of standby using dual-rate charging techniques for fast battery recharge.

4. It shall provide a very low frequency sweep earth detect circuit, capable of detecting earth faults on sensitive addressable modules.

5. It shall be power-limited per current UL864 requirements.

6. It shall provide meters to indicate battery voltage and charging current.

7. A separate power supply shall be provided for all externally controlled devices such as smoke dampers, remote relays, door holders, etc.

P. Auxiliary Field Power Supply - Addressable

1. The auxiliary addressable power supply is a remote 24 VDC power supply used to power Notification Devices and field devices that require regulated 24VDC power. The power supply shall also include and charge backup batteries.

2. The addressable power supply for the fire alarm system shall provide up a minimum of 6.0 amps of 24 volt DC regulated power for Notification Appliance Circuit (NAC) power or 5 amps of 24 volt DC general power. The power supply shall have an additional .5 amp of 24 VDC auxiliary power for use within the same cabinet as the power supply. It shall include an integral charger designed to charge 7.0 - 25.0 amp hour batteries.

3. The addressable power supply shall provide four individually addressable NACs that may be configured as two Class "A" and two Class "B" or four Class "B" only circuits. All circuits shall be power-limited per UL 864 requirements.

4. The addressable power supply shall provide built-in synchronization for certain Notification Appliances on each circuit without the need for additional synchronization modules. The power supply's output circuits shall be individually selected for synchronization. A single addressable power supply shall be capable of supporting both synchronized and non-synchronized Notification Devices at the same time.

5. The addressable power supply shall operate on 120 or 240 VAC, 50/60 Hz.

6. The interface to the power supply from the Fire Alarm Control Panel (FACP) shall be via the Signaling Line Circuit (SLC) or other multiplexed means Power supplies that do not use an intelligent interface are not suitable substitutes. The required wiring from the FACP to the addressable power supply shall be a single unshielded twisted pair wire. Data on the SLC shall be transmitted between 24 VDC, 5 VDC and 0 VDC at approximately 3.33k baud.

7. The addressable power supply shall supervise for battery charging failure, AC power loss, power brownout, battery failure, NAC loss, and optional ground fault detection. In the event of a trouble condition, the addressable power supply shall report the incident and the applicable address to the FACP via the SLC.

8. The addressable power supply shall have an AC Power Loss Delay option. If this option is utilized and the addressable power supply experiences an AC power loss, reporting of the incident to the FACP will be delayed. A delay time of eight or sixteen hours shall be Dip-switch selected.

9. The addressable power supply shall have an option for Canadian Trouble Reporting and this option shall be Dip-switch selectable.

10. The addressable power supply mounts in either the FACP backbox or its own dedicated surface mounted backbox with cover.

11. Each of the power supply's four output circuits shall be DIP-switch selected for NAC or General Purpose 24 VDC power. Any output circuit shall have up to 1.5 amps of 24 VDC power.

12. The addressable power supply's output circuits shall be individually supervised when they are selected to be either a NAC when wired Class "A" or by the use of and end-of-line resistor. When the power supply's output circuit is selected as General 24VDC power, the circuit shall be individually supervised when an end-of-line relay is used.

13. When selected for NACs, the output circuits shall be individually DIP-switch selectable for Steady, March Time, Dual Stage or Temporal.

14. When selected as a NAC, the output circuits of the addressable power supply shall have the option to be coded by the use of a universal zone coder.

15. The addressable power supply shall interface and synchronize with other power supplies of the same type. The required wiring to interface multiple addressable power supplies shall be a single unshielded, twisted pair wire.

16. An individual or multiple interfaced addressable power supplies shall have the option to use an external charger for battery charging. Interfaced power supplies shall have the option to share backup battery power.

Q. Field Charging Power Supply (FCPS)

1. The FCPS shall be Notifier FCPS-24S6 and offer up to 6.0 amps of regulated 24 volt power. It shall include an integral charger designed to charge batteries and to support 60 hour standby.

2. The Field Charging Power Supply shall have two input triggers. The input trigger shall be a NAC (from the fire alarm control panel) or a relay. Four outputs (two Style Y or Z and two styles Y) shall be available for connection to the Notification devices.

3. The FCPS shall include an attractive surface mount backbox.

4. The Field Charging Power Supply shall include the ability to delay the AC fail delay per NFPA requirements.

5. The FCPS include power limited circuitry, per 1995 UL standards.

R. System Circuit Supervision

1. The FACP shall supervise all circuits to intelligent devices, modules, horns, strobes, horn/strobes, and any remote power supplies and shall annunciate loss of communications with these devices/appliances. The FACP shall continuously scan the devices for proper system operation. Upon loss of response from a device, an audible trouble shall sound.

2. All fire protection system valves shall be supervised for off-normal position.

S. Field Wiring Terminal Blocks

1. For ease of service all wiring terminal blocks shall be the plug-in type and have sufficient capacity for 18 to 12 AWG wire. Terminal blocks permanently fixed are not acceptable. The number of wires at each terminal shall not exceed two.

T. FACP Programming Features

1. The Contractor shall retain the services of Factory certified technician for programming the FACP.

2. The system shall be programmable, configurable and expandable in the field without the need for special tools or electronic equipment and shall not require field replacement of electronic integrated circuits.

3. All programming or editing of the program in the system shall be achieved without special equipment and without interrupting the alarm monitoring functions of the FACP.

4. All programming shall be accomplished through the standard FACP keyboard or through the video terminal.

5. All field defined programs shall be stored in non-volatile memory

6. The programming function shall be enabled with a password that may be defined specifically for the system when it is installed. Two levels of password protection shall be provided in addition to a key-lock cabinet. One level shall be used for status level changes such as zone disable or manual on/off commands. A second (higher-level) shall be used for actual change of program information.

7. System programming shall be capable of being "backed-up” on CD or DVD diskette or other approved removable digital media, such as flash drive. This system back-up shall be capable of being downloaded to a replacement FACP system should the system be damaged due to fire or other event.

8. The Contractor shall turnover FACP passwords at the completion of programming or editing.

2.3 SYSTEM COMPONENTS

A. Addressable Devices (General)

1. Addressable devices shall provide an address-setting means and shall be compatible with the “Notifier” FACP.

2. Alarm initiating devices shall be intelligent and addressable, shall be compatible with the “Notifier” FACP, and shall connect to the “Notifier” FACP Signaling Line Circuits.

3. Detectors shall be intelligent and addressable, shall be compatible with the FACP, and shall connect to the FACP Signaling Line Circuits.

4. Smoke detector sensitivity shall be set through the FACP and shall be adjustable in the field through the field programming of the system.

5. Detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA 72.

6. The detectors shall be ceiling-mounted and shall include a separate twist-lock base which includes a tamper proof feature.

7. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the FACP. Such a test may be initiated at the detector itself or initiated remotely on command from the control panel.

8. Detectors shall also store an internal identifying type code that the control unit shall use to identify the type of device.

B. Addressable Manual Pull Station

1. Manual pull stations shall be compatible with the FACP. Manual pull stations shall, on command from the FACP, send data to the panel representing the state of the manual switch and the addressable communication status. They shall use a manually operated test-reset keylock, and shall be designed so that after actual emergency operation, they cannot be restored to normal use except by the use of a hex key wrench or similar tool.

2. Manual stations shall be constructed of cast metal or plastic with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters.

3. Stations shall be suitable for flush or semiflush mounting as shown on the plans, and shall be installed 48 inches on center above the finished floor.

4. A permanent label identifying the pull station address shall be provided on each pull station.

C. Photoelectric Smoke Detector

1. Photoelectric detectors shall be compatible with the FACP. The detectors shall use the photoelectric principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.

2. The smoke detectors shall be profiled for Office or Duct (as necessary and appropriate).

3. A permanent label, legible from the floor level, identifying the detector address shall be provided on each detector base.

D. Heat Detector

1. Heat detectors shall be compatible with the FACP. The detectors shall use the rate-of-rise and fixed temperature principals to measure heat.

2. The heat detectors shall be fixed temperature of 135°F and 15° per minute rate-of-rise.

3. A permanent label, legible from the floor level, identifying the detector address shall be provided on each detector base.

E. Combination Smoke/Carbon Monoxide Detector

1. Combination Smoke/Carbon Monoxide detectors shall be Notifier FCO-851 and shall be compatible with the FACP.

2. A permanent label, legible from the floor level, identifying the detector address shall be provided on each detector base.

F. Smoke Detector Sounder Bases (Sleeping Rooms)

1. Smoke Detector Sounder Bases shall be Notifier B200S-LF and shall be compatible with the FACP.

2. A permanent label, legible from the floor level, identifying the detector address shall be provided on each detector base.

G. Waterflow and Valve Position Supervisory Switches

1. To be connected to the FACP using compatible monitor modules.

2. When operated, an alarm signal shall be initiated at the FACP.

3. A permanent label, legible from the floor level, identifying the address shall be provided on each device as shown on the Drawings.

H. Monitor Modules

1. Monitor Modules shall be compatible with the FACP. Modules shall, on command, from the FACP, send data to the panel representing the state of the module and the addressable communication status.

I. Control Modules

1. Control Modules shall be compatible with the FACP. Modules shall, on command, from the FACP, send data to the panel representing the state of the module and the addressable communication status and perform the intended function.

J. Occupant Notification Appliances

1. Strobes: Field selectable candela values, strobe light with red lettered "FIRE" on white cover plate, System Sensor SpectrAlert Advance Series, or approved equal.

2. Horns: Temporal sound pattern with red lettered “FIRE” on white cover plate System Sensor SpectrAlert Advance Series, or approved equal.

3. Combination horn/strobes: Field selectable candela values, temporal sound pattern, strobe light with red lettered "FIRE" on white cover plate, System Sensor SpectrAlert Advance Series, or approve equal.

2.4 BATTERIES AND EXTERNAL CHARGER

A. Battery

1. Shall be 12 volt, Gell-Cell type.

2. Battery shall be furnished, and sized with minimum 25% over the capacity required for the operating system to sufficiently power the fire alarm system for not less than twenty-four hours plus 5 minutes of alarm upon a normal AC power failure.

B. External Battery Charger

1. Shall be completely automatic, with constant potential charger maintaining the battery fully charged under all service conditions. Charger shall operate from a 120-volt 60 hertz source.

2. Shall be rated for fully charging a completely discharged battery within 48 hours while simultaneously supplying any loads connected to the battery.

3. Shall have protection to prevent discharge through the charger.

4. Shall have protection for overloads and short circuits on both AC and DC.

2.5 FIRE ALARM WIRE AND CABLE

A. Conduit and wire shall be in accordance with the California Electrical Code (CEC), and NFPA 72.

1. Cable and wire shall not be installed in ventilation ducts without specific prior written approval of the Engineer. Cable and wiring routed in concealed areas meeting the protection requirements of the California Electrical Code (e.g. Article 760) may be routed without the use of conduit or raceway.

2. All fire alarm cable and wire shall be installed in conduit or other acceptable raceway (e.g. Wiremold). Decorative raceway (e.g. Wiremold or equal) shall be used in all finished areas at the direction of the University. Wiremold or other decorative raceway, shall be metallic. All raceways shall be supported and protected in accordance with the California Electrical Code and the manufacturer's requirements. Conduit installed above suspended/dropped ceilings shall be installed at a height to permit easy removal of the tiles (i.e. conduit shall not be directly laid, unsupported, on ceiling tile surfaces) and shall be routed parallel or perpendicular to the adjacent surface.

3. Decorative raceway (e.g. Wiremold or equal) installed in finished areas shall be installed on walls, level and parallel to the ceiling. Decorative raceway (e.g. Wiremold or equal) installed on ceilings to devices and/or appliances shall be run at right angles (perpendicular) to the wall surfaces.

4. See Division 26 "Electrical" for specifications related to electrical conductors, cables, raceways, and boxes.

B. Conduit/Raceway:

1. All cable/wiring shall be installed in conduit or raceway. Raceway fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.

2. Cable must be separated from any open conductors of power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, as per NEC Article 760-29.

3. Wiring for 24 volt control, alarm notification, emergency communication and similar power limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.

4. Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or backboxes, except where conduit entry is specified by the manufacturer.

5. Conduit shall be 3/4 inch minimum.

6. No conductor or cable splices shall be permitted below ground.

C. Wire

1. All fire alarm system wiring must be new.

2. Wiring shall be in accordance with the California Electrical Code, Article 760 and NFPA 72 and as recommended by the manufacturer. Number and size of conductors shall be as recommended by the fire alarm system manufacturer

3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.

4. All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; a trouble signal will be activated until the system and its associated field wiring are restored to normal condition.

D. Terminal Boxes, Junction Boxes and Cabinets

1. All boxes and cabinets shall be UL listed for their use and purpose.

E. The FACP shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the main power distribution panel as FIRE ALARM. Fire alarm control panel primary power wiring shall be minimum 12 AWG.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install initiating devices, control panels, audible signals, connections to equipment provided under other divisions, and related work following equipment manufacturers' requirements for a complete and properly functioning system that will perform all specified functions.

B. Control and other panels shall be mounted with sufficient clearance for observation and testing. All fire alarm junction boxes shall be clearly marked for distinct identification. All box and fitting covers in concealed or unfinished areas shall be painted RED.

C. All fire alarm circuits in conduit shall be installed in dedicated raceways, and shall not be mixed with any other raceway systems of any Class wiring

D. Provide all conduit and properly looped wiring necessary for the total operational system as shown on the Drawings. Assure that conduit size and wire quantity, size, and type are suitable for the equipment supplied and conform to equipment suppliers' requirements. No wiring other than fire

alarm circuits shall be permitted in the fire system conduits; 120V circuits shall be in separate fire alarm conduits. Wiring splices shall be made with live spring connectors only in junction boxes. Splices shall be kept to minimum.

E. End-of-line devices, for either initiating or indicating/notification appliance circuits, shall be mounted only in the control panel or the transmitter panel.

F. Automatic detector and occupant notification appliance installations shall conform to NFPA 72.

G. Make conduit and wiring connections to initiating devices, indicating/notification appliances, door release devices, sprinkler flow switches, sprinkler valve tamper switches, and duct smoke detectors.

H. Solid conductors terminated at screwed connections of any type shall be formed about the screw shank in a clockwise direction. Stranded conductors shall be terminated with a pressure-applied lug connector, applied with a tool approved for the use by the lug connector manufacturer and the Engineer.

I. All wiring shall be checked and tested to ensure that there are no grounds, opens, or shorts.

J. Install all wiring in accordance with the California Electrical Code and NFPA 72. Pull conductors to necessary and appropriate devices and appliances.

K. Provide all necessary connections and terminations. All field and FACP wiring shall be terminated in terminal cabinets or on field devices/appliances. All connections shall be made on terminals.

L. Provide all initial system addressing. Use the University's room numbers or names for annunciation. Correct the Drawings to reflect the zoning used.

M. Repair damage caused by the Contract work.

N. All tests shall be performed in the presence of the Engineer.

3.2 FIRE ALARM NAMEPLATES AND COLOR CODE

A. Identify all fire alarm equipment devices so that the address may be visible from the floor.

1. All devices and appliances shall have white background, black lettering, using an adhesive backed label, P-Touch, or approved equal.

2. Panels and cabinets shall utilize an attached identification tag, red phenolic plastic, with white core, 3/4 - inch by 2½ -inches, by 1/16-inch thick.

B. Box and conduit body covers shall be painted Red.

3.3 PROGRAMMING

A. The Contractor shall retain the services of factory certified technician for all programming

B. The University's room numbers or names provided by the Engineer for annunciation shall be used as part of the tag and/or descriptor for each point in the Fire Alarm System program. The Contractor shall update the Construction Drawings to reflect the addresses used.

C. In addition to the programming tasks required to implement the Fire Alarm System sequences of operation as depicted in the drawings, the factory certified technician shall perform all programming necessary to implement the following:

1. The points in the Fire Alarm System program representing initiating devices shall be logically grouped in the software such that a University operator can, from the FACP built-in interface, temporarily disable points by their logical group in addition to being able to do so by individual point. They shall also be able to filter alarm and trouble status information by group. These alarm groups shall be assigned meaningful names in the software that are integrated into the FACP built-in display. Alarm groups shall be created for the following physical locations:

    a. Each floor of the building, including the roof.

    b. Up to five additional locations to be provided to the programmer by the University during construction.

3.4 JOB CONDITIONS

A. Other trades will be in the Building during the installation. Coordinate movement and installation with the other trades.

3.5 PAINTING

A. Exposed conduit may be painted by the University's work force. Clean all exposed surfaces of oil, dirt, etc. to the satisfaction of the University.

3.6 TESTS AND REPORTS

A. The Contractor shall perform all electrical and mechanical tests required by the Authority Having Jurisdiction and the equipment manufacturer's installation procedures. All testing shall be coordinated with the University.

B. The Contractor shall measure and adjust each of the detectors to the maximum stable sensitivity setting. This must be performed at the operational location of the unit and under normal operational environmental conditions in the area. Bench settings are not acceptable.

C. All test and report costs shall be included in the contract price. A checkout report shall be prepared by the technician and submitted in triplicate, one copy of which will be registered with the equipment manufacturer. This report shall include, but not be limited to:

    1. A complete list of equipment installed and wired.

    2. Indication that all equipment is properly installed and functions and conforms to these specifications.

    3. Tests of individual zone functions as applicable.

    4. Serial number, location by zone, location on SLC or NAC loop, physical location in the building, space for signoff by Engineer, and model number for each installed detector.

    5. Voltage (sensitivity) settings for each detector as measured in place with air conditioning system operating.

    6. Response time for thermostats, flow switches, and flame detectors (if used).

    7. Verification of all event triggered device operations and status feedback

    8. Technician's name and date.

9. Include testing requirements for communication to OAK-AB BMCS.

3.7 SYSTEM ACCEPTANCE

A. Procedure for the Acceptance Tests shall be submitted for the University's approval. All tests shall be performed in the presence of the University's Representative.

B. The completed system shall be tested to ensure that it is operating properly. The testing shall consist of exposing the installed detection units to simulated smoke.

C. Acceptance of the system shall also require a demonstration of the operation and stability performance of the system. This shall be adequately demonstrated if the system operates for a ninety (90) day period without any unwarranted alarms. Should an unwarranted alarm(s) occur, the Contractor shall readjust or replace the detector(s) and begin another ninety (90) day test period.

D. Acceptance of the system shall also require the acceptance of the Authority Having Jurisdiction.

E. As required by the University's Representative, the Contractor shall recheck the detectors using the installation standard test after each readjustment or replacement of detectors. This test shall not start until the Engineer has obtained beneficial use of the building under test.

F. The Acceptance Test includes a demonstration of the following:

1. Activation of every initiation device.

2. Activation of every sprinkler control and monitoring device, with test of time delay features as outlined in the Contract Documents.

3. Activation and check of every indicating appliance, audible/visual device.

4. Activation of all fire alarm system controlled components.

5. Activation of all fan and air handler controls, with air handlers and fans in full operation.

6. Activation of alarm signaling to the remote control unit in the Campus receiver.

7. Activation of all fire alarm control features (i.e. by-pass software functions).

8. Testing of all appropriate circuits for open-circuit supervision, short-circuit supervision, and ground-fault supervision.

9. Magnhelic test of all duct smoke detectors to confirm operation with the listings and approvals.

3.8 OPERATION AND MAINTENANCE TRAINING

A. After completion of all the tests and adjustments listed in Section 3.7, above, the Contractor shall submit the following information to the University within two weeks after equipment operation.

1. As-built conduit layout diagrams including wire color code and/or tag number. Conduit layout diagrams shall meet the following requirements:

a. All devices installed as part of the Fire Alarm System shall be depicted on the drawings at their installed locations. This includes initiating devices, notification appliances, power supplies, control panels, etc.

b. All devices depicted on these drawings shall be identified on the drawings by their system address. All conduits shall be identified on the drawings by their type (RGS, EMT, LFMC, etc.), trade size, and conduit number.

c. “Home run” depiction of conduit layout shall not be acceptable. All conduit runs and any junction boxes shall be depicted in their final locations for each conduit and junction box installed as part of the Fire Alarm System.

d. Conduit runs spanning multiple drawings shall identify the drawings containing their continuation at each interruption.

2. Complete as-built wiring diagrams. As-built wiring diagrams shall meet the following requirements:

a. Generic manufacturer’s wiring diagrams provided as “wired similar to” examples shall not be acceptable.

b. All unique as-built final wiring diagrams shall be provided for all devices installed as part of the Fire Alarm System. A single depiction that is accurate for multiple devices is acceptable so long as all devices thus wired are identified by system address and/or tag number on the drawing in tabular format.

c. Wiring diagrams shall identify wire terminations for each wire by the printed identification at the device or panel terminals. Wiring terminated at power distribution/lighting panels shall identify the panel tag and circuit breaker number for the connected circuit.

d. Wiring diagrams shall call out wire insulation color and wire tag/number for each depicted wire.

3. Panel site layout and elevation drawings depicting the final, installed physical location of all Fire Alarm System control panels and power supplies.

4. Detailed catalog data on all installed system components.

5. Copy of the test report described in section 3.6.

6. "Operating and Shop Manuals". Each manual shall contain, but not be limited to the following:

a. Statement of Warranty including date of termination.

b. Name address and phone number of the service representative to be called in the event of equipment failure.

c. Individual factory-issued Installation, Operational and Maintenance manuals containing all technical information for each piece of equipment. Advertising brochures shall not be used in lieu of the required technical manuals.

d. A complete list of preventative maintenance requirements including recommended frequency for each type of device furnished as part of the project

e. Overall system logic diagrams.

f. System start-up, operating and shutdown Procedures.

g. System troubleshooting guide.

7. Electronic file copies of all the As Built drawings in AutoCAD format.

B. Provide training to the University's personnel regarding system operation and maintenance. The sessions shall include hands-on operation of the equipment by the University's personnel.

END OF SECTION 28 31 00