

## 1.01 CONDITIONS AND REQUIREMENTS

Division 1 - General Requirements shall govern work under all Divisions of the Specifications.

## 1.02 SPECIFICATION LANGUAGE EXPLANATION

Specifications are of abbreviated, simplified or streamlined type and include incomplete sentences. Omissions of words or phrases such as "the Contractor shall," "in conformity therewith," "shall be," "as noted on the Drawings," "a," "the" are intentional. Supply omitted words or phrases by inference in same manner as they are when "NOTE" occurs on Drawings. Supply words "shall be" or "shall" by inference when colon is used within sentences or phrases. Supply words "on the Drawings" by inference when "as indicated" is used with sentences or phrases.

Where reference is made to specifications, societies, institutes, or associations or manufacturer's directions, they are, except as may be inconsistent herewith, made part of specifications, to same extent as if written out in full herein. Use latest edition, at time of bidding, if a date is not given.

## 1.03 SUBMITTALS

- A. Prepare data for use by the University of Colorado, Facilities Management personnel.
- B. Format:
  - 1. Submit electronically in **Portable Document Format** (PDF) format as one document, OCR (Optical Character Recognition) searchable, bookmarked according to the Construction Specifications Institute (CSI) standards.
  - 2. Title shall be "SPECIFICATIONS", and shall include:
    - a. Name of project and submittal stage and date of submittal (month, day, and year).
    - b. University of Colorado Project number (Include on cover and in header or footer of each page)

## 1.04 CONTENT OF MANUAL

- A. An electronically-written table of contents shall be provided for each volume, arranged according to CSI standards.  
Include the following:
  - 1. Name of responsible installing principal contractor, address, and telephone number.

## 1.05 ABBREVIATIONS

References in Contract Documents to trade associations, technical societies, recognized authorities and other institutions include following organizations, which are sometimes referred to only by corresponding abbreviations:

AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturer's Association
ACI	American Concrete Institute

AIMA	Acoustical and Insulating Materials Association (successor to AMA and IBI)
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMA	Acoustical Materials Association
ANSI	American National Standards Institute (successor to USASI and ASA)
APA	American Plywood Association
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASTM	American Society for Testing Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWS	American Welding Society
CDA	Copper Development Associations, Inc.
CM/GC	Construction Manager/General Contractor
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard (U.S. Department of Commerce)
DFPA	Douglas Fir Plywood Association
EPA	Environmental Protection Agency
FGMA	Flat Glass Marketing Association
FIA	Factory Insurance Association
FM	Factory Mutual Engineering Division
FS	Federal Specification
MIA	Marble Institute of America
MIL	Military Specification
MILMA	Metal Lath Manufacturer's Association
NAAMM	The National Association of Architectural Metal Manufacturers
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEC	National Electric Code (of NBFU)
NEMA	National Electrical Manufacturers' Association
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NMWIA	National Mineral Wool Insulation Association
NPVLMA	National Paint, Varnish and Lacquer Manufacturers' Association
NTMA	The National Terrazzo and Mosaic Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PEI	Porcelain Enamel Institute
PS	Product Standard (U.S. Department of Commerce)
SCPI	Structural Clay Products Institute
SDI	Steel Deck Institute
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
SPA	Southern Pine Association
SPI	The Society of Plastic Industry, Inc.
SPR	Simplified Practice Recommendation (U.S. Department of Commerce)
SSPC	Steel Structures Painting Council
SWI	Steel Window Institute

TCA	Tile Council of America
UL	Underwriters' Laboratories, Inc.
WCLA	West Coast Lumbermen's Association
WRI	Wire Reinforcement Institute
WWPA	Western Wood Products Association

1.04 LAYING OUT WORK

The Contractor will furnish reference bench mark and maintain bench mark and all other grades, lines, and levels and dimensions as indicated in the Contract Documents. Report any errors or inconsistencies in above to Owner before commencing work.

Except as delegated by subcontract or normal trade practice, the Contractor will be responsible for all lines, elevations, and measurements of work indicated.

1.05 EXAMINATION OF SITE

Failure to visit the site will in no way relieve any Contractor from the necessity of furnishing materials or performing work that may be required to complete work in accordance with the Contract Documents without additional cost to Owner.

END OF SECTION

PART 1 - GENERAL

1.01 SCHEDULE OF DRAWINGS, SPECIFICATIONS AND ADDENDA

The following Drawings, Project Manual, and Addenda from the Contract Documents.

- A. Set(s) of Drawings & project manuals dated March 2011. Drawing list is as follows:

Refer to T6.1 drawings found at the website:

<http://www.colorado.edu/facilitiesmanagement/pdc/construction/open.html>

Notice 11-07

- B. Project Manual titles: CAMP-Distribution Enhancement dated March 2011.

- C. Addenda: All Addenda issued prior to bidding.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work covered: Work under this contract includes all materials, equipment and labor necessary to complete the work indicated on the drawings, described in specifications, addenda or reasonably inferred.

1.03 CONTRACTORS

All work will be executed under one prime construction contract between the Owner and the Contractor.

Except as indicated otherwise, all work under this contract will be under the direction of the prime contractor. **The steam expansion joints will be done by others and are not part of this contract.**

1.04 JOB CONDITIONS

- A. Buildings immediately adjacent to areas under construction will be occupied by the public during the work of this project. Conduct the work of this project in a manner that will minimize disruption of the Owner's occupancy of adjacent areas.

- B. Do not interrupt building access and use, except as permitted by the Owner.  
  
Provide **eight (8)** work days notice to the Owner of construction activities which will severely impact the occupancy and use of adjacent areas.
- C. Provide temporary traffic control signs, barricades, barriers and/or partitions as required to protect the occupants of the adjacent buildings and sidewalks used by the general public from injury due to the work of this project; and/or to protect adjacent areas of the building from the spread of dust and dirt caused by the work or this project.
- D. Do not interrupt power, lighting, plumbing, telephone and HVAC services to occupied areas without Owner's approval. Such interruptions must be scheduled at least **eight (8)** work days in advance and have Owner's approval.
- E. See the attached planning schedule included with the bid documents for reference and sequencing of the work.

#### 1.05 PROTECTION OF WORK AND ADJACENT PROPERTY

- A. Buildings and property adjacent to work included in this project may be subject to damage due to construction operations.  
  
Prior to the start of the work included in this Contract engage the services of a photographer to record the existing condition of adjacent structures and property. Contractor shall provide one set **set on disk** to the Owner and retain negatives and one set of prints for their records. Sufficient photos with adequate detail to thoroughly document the conditions surrounding the work shall be provided.
- B. At the completion of the project, Contractor shall restore existing buildings, landscaping, parking facilities and property to same condition as prior to the start of the work.
- C. In addition to the requirements of the General Conditions of the Contract for Construction, the Contractor shall:
  - 1. Notify, in writing, the Owner of University or private property which interferes with the work and arrange with them for disposition of such property.
  - 2. Provide and maintain proper shoring and bracing to prevent earth from caving or washing into excavation. Provide temporary protection around openings through and at floors, roofs, and other openings.
  - 3. Provide and maintain proper shoring and bracing for existing underground utilities, sewers, etc., encountered during excavation work, to protect them from collapse or other type of damage until such time as they are to be removed, incorporated into the work of this project, or can be properly back-filled upon completion of new work.
  - 4. Weather Protection: Provide protection against rain, snow, wind, ice, storms, or heat so as to maintain work, materials, apparatus, and fixtures free from injury or damage. At the end of each day's work, cover new work likely to be damaged.

5. Provide and maintain adequate protection of the work from damage due to freezing, especially freezing earth and soils. Risk of proceeding with the work on or with freezing or frozen materials will be the sole responsibility of the Contractor.
6. Water Protection: Provide protection from damage at all times from rain water, ground water, backing up of drains or sewers, and other water. Provide pumps and equipment enclosures to provide this protection.
7. The Contractor will maintain free of obstructions and debris, all designated corridors and emergency exits, handicap access ramps and sidewalks to building. Provide temporary directional handicapped signage for routing to the nearest accessible facilities.

#### 1.06 EXISTING FURNITURE AND EQUIPMENT

The Owner will remove or relocate existing movable furniture and equipment from the areas in which the Contractor is working. Notify the Owner not less than three days prior to starting work in areas where furniture and equipment require moving.

#### 1.07 CONTRACTOR'S ACCESS PARKING AND STAGING AREAS

- A. Work included in this project will need to be performed within the limitations of available access at the site. The University shall limit the area available for staging and parking due to the additional number of construction projects planned during the execution of this contract. Contractor shall adjust the means and methods of construction to allow for the restrictions surrounding the site.
- B. All parking on campus except for some one-hour zones on city streets and a few metered spaces is under control and authority of the Parking and Transportation Services (PTS) of the University. All University parking is by permit only.
- C. Types of parking and staging are defined as follows:

General Staging Areas are approved areas adjacent to the site when available or in University designated group staging yards. General Staging Areas may be used for any purpose, including employee parking, on a space available basis, but must be coordinated through the UCB Project Manager and PTS. Vehicles may not park outside of general staging areas except in areas coordinated and approved by PTS.

Restricted Staging Areas are approved areas near the site for the construction dumpster, off-loading of equipment, contractor's work trailer, and materials that are soon to be incorporated into the work. No vehicles shall park in a restricted staging area for more than 20 minutes between the hours of 8:00 a.m. and 5:00 p.m. weekdays.

Contractor Employee Parking are areas for workers needing parking on campus. Coordinate through UCB Project Manager and PTS.

Prohibited Parking are areas designated in the Contract Documents as No Parking areas. The contractor shall not allow any parking in areas so designated under any circumstance.

- D. The restrictions in this Section are in addition to any other restrictions or rules provided by PTS. Fees shall be assessed for the use of any PTS facility for staging and construction activities.
- E. The designated staging area for this project is shown on the contract documents (T6-3) and shall be discussed at prebid meeting.
- F. The contractor shall protect all trees located within the work areas to the drip line of the trees. Sod and planting beds within the staging and/or work areas shall be restored to a “like-new” condition upon completion of the work if impacted.
- G. Vehicles parked on sidewalks or in landscape areas outside the designated staging areas cause damage to University property. The contractor shall reimburse the University \$25.00 per vehicle per occurrence for vehicles parked outside the designated staging areas. This amount shall be in addition to any fines which might be levied by PTS.

#### 1.08 OCCUPANCY REQUIREMENTS

- A. ~~Owner may occupy designated areas for the purpose of storage of furnishings and equipment and installation of equipment.~~
- B. Execute Certificate of Substantial Completion for each designated portion of work prior to Owner occupancy. Contractor shall allow:
  - 1. Access for Owner personnel.
  - 2. Use of parking facilities.
  - 3. Operation of HVAC and electrical systems.
- C. On occupancy, Owner will provide, for occupied areas:
  - 1. Operation of HVAC and electrical systems.
  - 2. Maintenance.
  - 3. Security.

#### 1.09 CONSTRUCTION AND SEQUENCE SCHEDULE:

- A. In order to accommodate the uninterrupted operation of the adjacent building(s) and utility services during the various phases of construction, the sequence of construction operations shall be as follows:
  - 1. The sequence concept is to: (1) keep the existing facility (Farrand and Baker Halls) functioning during renovation through completion.
  - 2. Utilizing this concept break down the Schedule into broad scope categories augmented by “Owner Action” and “Contractor action” columns that indicate coordination tasks which define the various phases of the work.
  - 3. The intent of the categorization is to generally summarize the nature and extent of work to be performed without in any way limiting specific requirements of the Contract Documents.
  - 4. Some overlapping between the several construction operations will occur, and where possible, permission may be granted to start certain portions of the work before the previous operations were completed in their entirety. Such detail scheduling shall be done as the work progresses, provided that the Owner’s operations remains uninterrupted, but in all cases must receive Owner approval.

5. Where it may not be possible to complete certain mechanical and electrical services in connection with making the work complete and ready for occupancy, temporary services as directed and as approved shall be installed to permit occupancy by the Owner at the earliest possible date.
6. The construction sequence schedule and related drawings are intended to aid the Contractor in bidding and in the preparation of a specific construction schedule. Deviations of sequence may be made upon approval of the Owner and the Architect. The preparation of a specific construction schedule remains the responsibility of the Contractor

1.10 TEMPORARY ELECTRIC SERVICE

- A. Connect to existing power service. Power consumption shall not disrupt owners need for continuous service. **Owner** to pay for power consumed. Provide power outlets for construction operations, branch wiring, distribution boxes, and flexible power cords as required.

END OF SECTION

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.

## 1.02 SURVEYS, LAYOUTS, AND LEVELS

- A. General: Working from lines and levels established by the existing building, and as shown in relation to the work, establish and maintain bench marks and other dependable markers to set the lines and levels for the work of construction as needed to properly locate every element of the work of the entire project. Calculate and measure required dimensions as shown (within recognized tolerances if not otherwise indicated); do not scale the drawings to determine dimensions. Continuously advise tradesmen performing the work of the marked lines and levels provided for use in the layout of work.

## 1.03 PROJECT RECORD DOCUMENTS

- A. Maintain at job site, one copy of:
  - 1. Contract Drawings
  - 2. Specifications
  - 3. Addenda
  - 4. Reviewed Shop Drawings
  - 5. Change Orders
  - 6. Other Modifications to Contract
  - 7. Field Test Records
  - 8. As-Built Drawings
- B. Maintain documents in clean, dry, legible condition and do not use record documents for construction purposes. Make documents available at all times for inspection by the Consultant and Owner.
- C. Label each document "Project Record" in 1" or larger printed letters.
- D. Record drawing information in colored pencil with different colors for the various systems and defined by color legend.
- E. Record drawings and specifications shall include the following:
  - 1. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure. Location of concealed valves, dampers, controls, balancing devices, junction boxes, clean-outs, and other items requiring access or maintenance.
  - 2. Field changes of dimension and detail, changes made by Change Order or Field Order and details not on original contract drawings.
  - 3. Fire protection and alarm systems shop drawings.

- F. Submit all record drawings to the Consultant at the completion of the project.

#### 1.04 CLEANING

- A. **Cleaning and Protection Work:** At the time each unit of work or element of the construction is completed (substantially) in each area of the Project, clean the unit or element to a condition suitable for occupancy and use (as intended), and restore minor or superficial damage. Replace units and elements which are damaged beyond successful restoration. Clean and restore adjoining surfaces and other work which was soiled or damaged (superficially) during the installation; replace other work damaged beyond successful restoration. Where the performance of subsequent work could possibly result in damage to the complete unit or element, provide protective covering or other provisions to minimize possible damage. Repeat cleaning and protection operations during remainder of construction period, wherever work might otherwise be damaged by sustained soiling or exposure.
- B. **During Construction:** Oversee cleaning and ensure that building, grounds, and public properties are maintained free from accumulation of waste materials and rubbish. At reasonable intervals during daily progress of work, clean up site and access and dispose of waste materials, rubbish, and debris. Vacuum clean interior building areas when ready and continue vacuum cleaning on an as-needed basis until building is ready for acceptance or occupancy.

#### 1.05 PROJECT SIGN

Erect no project sign or job-site sign of any kind, except warning signs as specified in Section 01500, without written authorization of the Owner.

#### 1.06 COORDINATION

- A. The Contractor shall coordinate the work so as not to interfere with the building custodian's normal cleanup activities.
- B. The Contractor shall be responsible for coordinating all the work of the project. The Contractor shall coordinate the efforts of all subcontractor(s) and the deliveries of suppliers so that the work progresses in an orderly fashion without delay towards timely completion of a complete project in accordance with the drawings and specifications.
- C. The Contractor shall note that concurrent with his work, other contractors, suppliers, and the Owner's facilities and maintenance personnel may be working in relatively close proximity. The Contractor will be solely responsible for coordinating his work with that of other contractors and will make no claims for failure to do so.

#### 1.08 METHODS OF CONSTRUCTION

- A. The procedure and method of construction is the prerogative and the responsibility of the Contractor. If professional assistance is required to safely implement method of construction, the Contractor shall, on his own, employ professional help.

END OF SECTION

GENERAL REQUIREMENTS  
SECTION 01026

DIVISION 1 - PAGE 1  
UNIT PRICES

## PART 1 - GENERAL

## 1.01 GENERAL

Quantities indicated on the drawing or extra quantities specified shall be included in the Contractor's Base Bid. For Adding or Deducting from Base Bid quantities, the unit prices described in this section will be applied. The Contractor will be notified, in writing, of the quantities applicable for each unit price, and the Contract Price will be adjusted accordingly by Change Order.

All unit prices shall include all labor, materials, equipment, services, delivery to the project, overhead, profit, insurance, and all other incidental expenses to complete the work specified unless indicated otherwise. All work covered by unit prices shall be performed in accordance with requirements of the applicable sections of the Specifications.

## 1.02 UNIT PRICES

Item	Item Description	Quantity	Units	Unit Cost	Total Cost
1.	ROUT AND SEAL SURFACE CRACKS ABOVE TUNNEL WHERE NOTED ON PLAN, SEE DETAIL S-02. CLEAN EFFLORESCENCE	500	LF	_____	_____
2.	OVERHEAD SPALL REPAIR OF DELAMINATED CONCRETE AND CORRODED REINFORCING BARS. SEE DETAIL S-03.	250	SQFT	_____	_____
3.	VERTICAL SPALL REPAIR OF DELAMINATED CONCRETE AND CORRODED REINFORCING BARS. SEE DETAIL S-04.	300	SQFT	_____	_____
4.	EPOXY INJECT CRACKS GREATER THAN 0.012" IN WIDTH WHERE NOTED ON PLAN. SEE DETAIL S-05.	50	LF	_____	_____
5.	REMOVE DETERIORATED PIPE SUPPORT RACK AND INSTALL NEW PIPE SUPPORT RACK. SEE DETAIL S-06.	7	EACH	_____	_____
6.	CLEAN EFFLORESCENCE AND INJECT LEAKING CRACKS WITH HYDROPHOBIC CHEMICAL GROUT. SEE DETAIL S-07.	400	LF	_____	_____
7.	REMOVE EXISTING SIDEWALK AND EXCAVATE SOIL AS REQ'D TO COMPLETE THE TUNNEL LID REPLACEMENT. SEE DETAIL S-08	2400 (SIDEWALK)	SQFT	_____	_____
		100 (EXCAVATION)	CUYD	_____	_____
8.	REMOVE AND REPLACE OLD CONC PATCH. SEE DETAILS S-03 & S-04 FOR REPAIR PRODUCTS AND PROCEDURES.	50	SQFT	_____	_____

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9.	CLEAN EFFLORESCENCE, RUST AND WATER STAINS WHERE NOTED ON PLANS.	300	SQFT	* _____	* _____
10.	INSTALL PANIC HARDWARE ON BUILDING MECHANICAL ROOM DOOR OR TUNNEL LID HATCH IN ACCORDANCE WITH UCB STANDARDS	1	EACH	* _____	* _____
11.	CLEAN ALL DEBRIS FROM CLOGGED FLOOR DRAIN (BY JETTING OR OTHER MEANS ACCEPTABLE TO THE UNIVERSITY)	2	EACH	* _____	* _____

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL ALTERNATE REQUIREMENTS

- A. General: The description for each alternate is recognized to be incomplete and abbreviated but implies that each change must be complete for the scope of work affected. Refer to applicable sections and to applicable drawings for the specific requirements of the owner, whether or not references are so noted in the description of each alternate. Modify surrounding work as required to integrate with the work of each alternate.

1.02 SPECIFIC ALTERNATES

- A. Add Alternates:

Item	Item Description	Drawing Reference **	Quantity	Units	Unit Cost	Total Cost
1	REMOVE AND REPLACE SIDEWALK SHOWN ON SHEETS T6-A-S & T6-B-S	T6-A-S & T6-B-S	3600	SQFT	_____	_____
2	IN LIEU OF TUNNEL LID REPLACEMENT AND OVERHEAD PATCHES SHOWN ON SHEETS T6-P-S AND T6-Q-S, PERFORM CONTINUOUS TUNNEL LID REPLACEMENT FROM PIPE STAND T6P-PG1 TO TUNNEL HATCH TE6-635.	T6-P-S & T6-Q-S	750	SQFT	_____	_____

END OF SECTION

## PART 1 - GENERAL

## 1.01 SUMMARY

- A. General Contractor is responsible for all of the work of this contract.
  - 1. Assign and subcontract portions of the work as required to assure that all work is constructed in compliance with these documents.
  - 2. Coordinate the work of the several subcontractors for the project.
  - 3. Coordinate work of this contract with work by separate contractors.
  
- B. Each subcontractor shall:
  - 1. Coordinate work of his own employees and subcontractors.
  - 2. Expedite his work to assure compliance with schedules.
  - 3. Coordinate his work with that of other subcontractors and work by separate contractor.
  - 4. Comply with orders and instructions of owner.
  
- C. Related Requirements
  - 1. All Division 1 Sections.

## 1.02 CONSTRUCTION ORGANIZATION AND START-UP

- A. Establish on-site lines of authority and communications.
  - 1. Attend pre-construction meeting with subcontractors upon commencement of the project.
  - 2. Establish procedures for intra-project communications.
    - a. Submittals.
    - b. Reports and records.
    - c. Recommendations.
    - d. Coordination Drawings.
    - e. Schedules.
    - f. Resolution of conflicts.
  - 3. Interpret Contract Documents.
    - a. Consult with Architect to obtain interpretation.
    - b. Assist in resolution of questions or conflicts which may arise.
    - c. Transmit written interpretations to subcontractors, and to other concerned parties.
  - 4. Assist in obtaining permits and approvals.
    - a. Obtain building permits and special permits required for work or for temporary facilities.
    - b. Verify that subcontractors have obtained inspections for work and for temporary facilities.
  - 5. Control the use of site.
    - a. Supervise field engineering and site layout.
    - b. Allocate space for each subcontractor's use for field offices, sheds, work and storage areas.
    - c. Establish access, traffic and parking allocations and regulations.
    - d. Monitor use of site during construction.

## 1.03 CONTRACTOR DUTIES

- A. Construction Schedules.
  - 1. Coordinate schedules with several subcontractors.
  - 2. Monitor schedules as work progresses.
    - a. Identify potential variances between schedules and probable completion dates for each phase.
    - b. Recommend adjustments in schedule to meet required completion dates.
    - c. Adjust schedules of subcontractors as required.
    - d. Document changes in schedule.
  - 3. Observe work of each subcontractor to monitor compliance with schedule.
    - a. Verify that labor and equipment are adequate for the work and the schedule.
    - b. Verify that product procurement schedules are adequate.
    - c. Verify that product deliveries are adequate to maintain schedule.
- B. Process Shop Drawings, Product Data and Samples.
  - 1. Review for compliance with Contract Documents.
    - a. Field dimensions and clearance dimensions.
    - b. Relation to available space.
    - c. Relation to other trades, equipment and systems.
    - d. Submit to Architect.
- C. Monitor the use of temporary utilities.
  - 1. Verify that adequate services are provided and maintained.
- D. Inspection and Testing.
  - 1. Inspection work to assure performance in accord with requirements of Contract Documents.
  - 2. Administer special testing and inspections of suspected work.
  - 3. Reject work which does not comply with requirements of Contract Documents.
  - 4. Coordinate testing laboratory services.
    - a. Verify that required laboratory personnel are present.
    - b. Verify that tests are made in accordance with specified standards.
    - c. Review test reports for compliance with specified criteria.
    - d. Recommend and administer required retesting.
- E. Monitor contractor's periodic cleaning.
  - 1. Enforce compliance with specifications.
  - 2. Resolve any conflicts.
- F. Coordinate changes.
  - 1. Recommend necessary or desirable changes.
  - 2. Assist owner in negotiating change orders.
  - 3. Promptly notify all subcontractors of pending changes.
- G. Maintain Reports and Records at Job Site available to Architect and Subcontractors.
  - 1. Log progress of work of each subcontractor.
  - 2. Records
    - a. Contracts.
    - b. Purchase orders.

- c. Materials and equipment records.
    - d. Applicable handbooks, codes and standards.
  3. Obtain information from subcontractors and maintain file of Project Record Documents.
  4. Assemble documentation for handling of claims and disputes.
- H. Coordinate work of this Contract and requirements of this section with work by Separate Contract including but not limited to:
  1. Removal of asbestos containing materials by separate contract.

#### 1.04 CONTRACT CLOSEOUT

- A. Coordinate equipment start-up.
  1. Provide seven days notification prior to start-up of each item.
  2. Ensure that each piece of equipment or system is ready for operation.
  3. Execute start-up under supervision of responsible persons in accordance with manufacturer's instructions.
  4. Perform required testing and balancing.
  5. Record dates of start of operation of systems and equipment. Submit written report that equipment or system has been properly installed and is functioning correctly.
  6. Provide written notice of beginning of warranty period for equipment put into service.
- B. Demonstration and Instructions
  1. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to Substantial Completion.
  2. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, seasonal operation, and shutdown of each item of equipment.
- C. At completion of work of each Section, conduct an inspection to assure that
  1. Specified cleaning has been accomplished.
  2. Temporary facilities have been removed from site.
- D. At completion
  1. Conduct an inspection to list work to be completed or corrected.
  2. Supervise correction and completion of work as established in Certificate of Completion.
- E. When a portion of the Project is occupied prior to final completion, coordinate established responsibilities of each subcontractor.
- F. Final completion.
  1. When each Subcontractor determines that work is finally complete, conduct an inspection to verify completion of work.
  2. Assist owner and architect in inspection.
- G. Administer contract closeout.
  1. Receive and review Subcontractor's final submittals.
  2. Transmit to architect with recommendation for action.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Carefully coordinate the interface between Division 15 (Mechanical) and Division 16 (Electrical) before submitting any equipment for review or commencing installation.
- B. Responsibility: Unless otherwise indicated, all motor and controls for Division 15 equipment shall be furnished, set in place and wired in accordance with the following schedule:

ITEM	FURNISHED UNDER	SET IN PLACE UNDER	POWER WIRING UNDER	CONTROL WIRING UNDER
Equipment Motor	15	15	16	-
Automatically Controlled Starter/contractors:				
Separate	15	16	16	15
Factory Mounted & Wired	15	15	16	15
In Motor Control Centers	16	16	16	16
Manually Controlled Starter/Contractors:				
Separate	15	16	16	15
Factory Mounted & Wired	15	15	16	15
Motor Speed Controllers	15	16	16	16
Disconnect (Note 1) Switches	16	16	16	-
Contactors	16	16	16	-
Thermal Overload (Note 1) Switches	16	16	16	-
Manual Operation (Note 2)	16	16	16	-
Switches	16	16	16	-
Control Relays (Note 2)	15	15	-	15
Control Transformers	15	15	16	15
Control Circuit Outlets	16	16	16	-
Thermostats (Note 2)	15	15	-	15

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MECHANICAL AND ELECTRICAL COORDINATION

ITEM	FURNISHED UNDER	SET IN PLACE UNDER	POWER WIRING UNDER	CONTROL WIRING UNDER
Time Switches (Note 2) Not in Control Panel	15	15	16	15
Push Button Stations, Pilot Lights	16	16	16	16
Thermostats (Note 2) Controls: Integral with Equipment Directly Applied to Ducts, Pipes, etc.	15	15	16	15
Valve Motors, Damper Motors, Solenoid Valves, etc.	15	15	-	15
EP Valves or Switches, P.E. Switches	15	15	-	15
Control Circuit Outlets	16	16	16	-
Fire Alarm Systems	16	16	16	16
Fire Sprinkler Alarm	16	16	-	16
Firestats	16	16	-	16
Smoke Detectors Including Relays for Fan Control	16	16	-	16
Control Air Compressor	15	15	16	15
Refrigerated Air Dryer	15	15	16	15
Equipment Interlocks	15	15	-	15
Boiler and Water Heaters	15	15	16	15

## NOTES:

1. If furnished as part of factory wired equipment furnished and set in place under Division 15, wiring and connections under Division 16.
2. If float switches, line thermostats, P.E. switches, time switches, or other controls carry the FULL LOAD CURRENT to any motor, they shall be furnished under Division 15, but they shall be set in place and connected under Division 16 except that where such items are an integral part of the mechanical equipment, or directly attached to ducts, piping, or other mechanical equipment, they shall be set in place under Division 15 and connected under Division 16. If they do not carry the FULL LOAD CURRENT to any motor, they shall be furnished, set in place and wired under Division 15.

- C. Control Wiring: Consists of wiring in pilot circuits of contact or starters, sensors, controllers, and relays, and wiring for valve and damper operators.
  - 1. Connections: Connections to all controls directly attached to ducts, piping and mechanical equipment shall be made with flexible connections.
  
- D. Starters: Provide magnetic starters for all three phase motors and equipment complete with:
  - 1. Control transformers.
  - 2. 120V holding coils.
  - 3. Integral hand-off-auto switch.
  - 4. Auxiliary contacts required for system operation plus one (1) spare.
  
- E. Remote Switches and Push Button Stations: Provide all remote switches and/or push button stations required for manually operated equipment (if no automatic controls have been provided) complete with pilot lights of an approved type lighted by current from load side of starter.
  
- F. Special Requirements: Motors, starters and other electrical equipment installed in moist areas or areas of special conditions, such as explosion proof, shall be designed and approved for installation in such areas with appropriate enclosure.
  
- G. Identification: Provide identification of purpose for each switch and/or push button station furnished. Identification may be either engraved plastic sign or permanent mounting to wall below switch, or stamping on switch cover proper. All such identification signs and/or switch covers in finished areas shall match other hardware in the immediate areas.
  
- H. Control Voltage:
  - 1. Maximum allowable control voltage 120V. Fully protect control circuit conductors in accordance with National Electrical Code.
  - 2. Provide 20A breakers in emergency panels under Division 16 as required for Building Management System Air Temperature Controls (BMS/ATC). Provide all control transformers, control wiring and connections to circuits under Section 15950 of Division 15.
  
- I. Related Requirements
  - 1. Section 16480: Electric Motors
    - a. Coordinate with efficiency requirements.
  
- J. Contractor must review all concrete embedded items (including conduit) with owner prior to placement.

PART 2 - PRODUCTS

2.01 MOTOR HORSEPOWER

- A. In general, all motors 1/2 HP and above shall be three phase, all motors less than 1/2 HP shall be single phase.
- B. Voltage and phase of motors as scheduled on the electrical drawings shall take precedence in the case of a conflict between the mechanical and electrical drawings or General Condition 2.01 A., above.
- C. Work under Division 15 includes coordinating the electrical requirements of all mechanical equipment with the requirements of the work under Division 16, before ordering the equipment.
  - 1. If motor horsepower is changed under the work of Division 15, without a change in duty of the motor's driven device, coordination of additional electrical work (if any) and additional payment for the work (if any) shall be provided under the section of Division 15 initiating the change. Increases or decreases in motor horsepower from that specified shall not be made without written approval from the Engineer.

PART 3 - EXECUTION

NOT USED.

END OF SECTION

## PART 1 - GENERAL

## 1.01 DESCRIPTION

- A. Work Included: This section establishes general requirements in addition to those indicated in the General Conditions of the Contract for Construction pertaining to cutting, fitting, and patching of the work required to:
1. Make the several parts fit properly.
  2. Uncover work to provide for installation, inspection, or both, of ill-timed work.
  3. Remove and replace work not conforming to requirements of Contract Documents.
  4. Patch new construction into existing construction.
- B. Related Work:
1. In addition to requirements specified, upon the Consultant's request, uncover work to provide for inspection of covered work, and remove samples of installed materials for testing.
  2. Do not cut or alter work performed under separate contract without the Consultant's written permission.

## 1.02 QUALITY ASSURANCE

- A. Perform all cutting and patching in strict accordance with pertinent requirements of the Specifications and, in the event no such requirements are determined, in conformance with the Consultant's written direction.
1. Use skilled workmen to perform all cutting and patching work.
  2. Use methods least likely to damage existing surfaces and materials to remain, while providing proper surfaces to receive installation of repair, patching, and/or new work.
- B. Visual Quality:
1. Do not cut and patch work exposed to public view, and the exterior and/or interior of the building in a manner that will result in an unacceptable appearance as determined by the Consultant.
  2. Do not cut and patch work in a manner that will result in obvious appearance that cutting and patching work was done.
  3. When cutting existing structural concrete, do not extend saw cuts beyond the corners of the required opening on either side of the opening.

## 1.03 EXISTING CONSTRUCTION

- A. Where cutting and patching of existing construction is required; prior to start of work, inform Owner of existing construction to be disturbed. Owner will determine if elements of existing construction contain asbestos. Do not proceed with work until after Owner has examined areas to be disturbed. Refer to Exhibit A, Project Pre-Inspection for Possible Presence of Asbestos for additional information concerning the possible presence of materials containing asbestos.

## 1.04 SUBMITTALS

- A. Submit proposed cutting and patching procedures in writing for the following categories of work prior to proceeding with this work:

1. Cutting new openings in existing structural concrete walls, parapets, and suspended slabs.
  2. Cutting new openings in existing roofs and roofing materials.
- B. Submittals shall comply with Section 01300.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Except as otherwise indicated in pertinent sections of these specifications, or as directed by the Consultant, use materials which are identical to existing materials in workmanship, appearance, and performance.
- B. If identical materials are not available, match existing as closely as possible, especially existing visual characteristics.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. Before proceeding, inspect existing conditions, including elements subject to movement or damage during cutting, excavating, backfilling, and patching.
- B. After uncovering the work, inspect conditions affecting installation of new work.
- C. If uncovered conditions are not as anticipated or if existing construction is not as indicated on the Drawings, immediately notify the Consultant for further instructions.

### 3.02 PREPARATION

- A. Provide shoring, bracing, and support as required to maintain structural integrity of the project.
- B. Take all necessary action required to protect adjacent existing surfaces from damage due to the work of this section.
- C. Take all precautions necessary to protect existing surfaces and materials, new work, and the work of this section from damage due to adverse weather conditions.
- D. Provide temporary support of work to cut and adjacent work to prevent failure or damage due to the work of this section.
- E. Properly prepare substrate surfaces exposed during cutting as required to receive the work of this or other sections of these specifications in strict compliance with manufacturer's recommendations and these specifications.

3.03 EXECUTION

- A. Perform all required cutting and patching as required or reasonably implied under pertinent sections of these specifications.
- B. Perform cutting and demolition by methods which will prevent damage to other portions of the work and will provide proper finished installation complying with the specified tolerances and finishes.

3.04 PERFORMANCE

- A. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work. Saw-cut and otherwise isolate areas to be demolished.
- B. Repair or otherwise rebuild and/or construct all surfaces affected by cutting and demolition. Execute fitting and adjustment of products to provide totally finished installation to comply with tolerances, finishes, and profiles of adjacent surfaces, whether new or existing.
- C. Restore work which has been cut or exposed by demolition; install new construction in compliance with specifications for type of new work to be done or as required to match existing adjacent surfaces. In no case shall any exposed existing surface be left in a raw, marred, or unfinished surface.
- D. Refinish entire surfaces as necessary to provide an even finish.
  - 1. Continuous Surfaces: To nearest intersections.
  - 2. Assembly: Entire refinishing.

END OF SECTION

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 - Specification sections, apply to work of this section.

## 1.02 SUMMARY:

- A. Section Includes:
  - 1. General administrative requirements and procedures and related applicable codes.

## 1.03 APPROVAL AND RECOMMENDATION AGENCIES:

- A. The University of Colorado at Boulder has jurisdiction for the interpretation and enforcement of code requirements for construction of projects.

## 1.04 CODES:

- A. All Contractors shall comply with all applicable codes, ordinances and regulations in effect at the time of bid openings.

**APPROVED STATE BUILDING CODES**

The following approved building codes and standards have been adopted by State Buildings Programs (SBP) as the minimum requirements to be applied to all state-owned buildings and physical facilities including capital construction and controlled maintenance construction projects.

**The 2006 edition of the International Building Code (IBC)**

(as adopted by the Colorado State Buildings Program as follows: Chapters 2-35 and Appendices C and I)

**The 2006 edition of the International Mechanical Code (IMC)**

(as adopted by the Colorado State Buildings Program as follows: Chapters 2-15 and Appendix A)

**The 2006 edition of the International Energy Conservation Code (IECC)**

(as adopted by the Colorado State Buildings Program)

**The 2008 edition of the National Electrical Code (NEC)**

(National Fire Protection Association Standard 70) (as adopted by the Colorado State Electrical Board)

**The 2009 edition of the International Plumbing Code (IPC)**

(as adopted by the Colorado Examining Board of Plumbers as follows: Chapter 1 Section 101.2, 102, 105, 107, Chapters 2-13 and Appendices B, D, E, F, and G)

**The 2009 edition of the International Fuel Gas Code (IFGC)**

(as adopted by the Colorado Examining Board of Plumbers as follows: Chapter 1 Section 101, 102, 105, 107, Chapters 2-8 and Appendices A, B and C)

Please consult the website [www.dora.state.co.us/plumbing/index.htm](http://www.dora.state.co.us/plumbing/index.htm) for additional information on the revisions and exceptions to the IPC and IFGC and the inclusion of the new 105 and 107 sections. It is OSA/SBP's intent to adopt the 2009 International Building Code (IBC), the 2009 International Mechanical Code (IMC), and the 2009 International Energy Conservation Code (IECC) to be implemented at the start of the fiscal year on July 1, 2010.

**The National Fire Protection Association Standards (NFPA)**

(as adopted by the Department of Public Safety/Division of Fire Safety as follows with editions shown in parentheses: NFPA-1 (2006), 11 (2005), 12 (2005), 12A (2004), 13 (2002), 13D (2002), 13R (2002), 14 (2003), 15 (2001), 16 (2003), 17 (2002), 17A (2002), 20 (2003), 22 (2003), 24 (2002), 25 (2002), 72 (2002), 409 (2004), 423 (2004), 750 (2003) and 2001 (2004))

**The 2004 edition of the ASME Boiler and Pressure Vessel Code**

(as adopted by the Department of Labor and Employment/Boiler Inspection Section as follows: sections I, IV, VIII-Divisions 1 and 2 and 3, X and B31.1)

**The 2004 edition of the National Boiler Inspection Code (NBIC)**

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

**The 2004 edition of the Controls and Safety Devices for Automatically Fired Boilers CSD-1**

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

**The 2004 edition of the Boiler and Combustion Systems Hazards Code, NFPA 85**

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

**The 2007 edition of ASME A17.1 Safety Code for Elevators and Escalators**

(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

**The 2005 edition of ASME A17.3 Safety Code for Existing Elevators and Escalators**

(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

**The 2005 edition of ASME A18.1 Safety Standard for Platform Lifts and Stairway Chairlifts**

(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

**The current edition of the Rules and Regulations Governing the Sanitation of Food Service Establishments**

(as adopted by the Department of Public Health and Environment/Colorado State Board of Health)

**The 2003 edition of ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities**

(as adopted by the Colorado General Assembly as follows: CRS 9-5-101, as amended, for accessible housing)

Note: Additional codes, standards and appendices may be adopted by the state agencies and institutions in addition to the minimum codes and standards herein adopted by State Buildings Programs.

1. The 2006 edition of the IBC became effective on July 1 of 2007. Consult the state electrical and plumbing boards and the state boiler inspector and conveyance administrator and the Division of Fire Safety for adoption of current editions and amendments to their codes.
2. Projects should be designed and plans and specifications should be reviewed based upon the approved codes at the time of A/E contract execution. If an agency prefers to design to a different code such as a newer edition of a code that State Buildings Programs has not yet adopted, the agency must contact SBP for approval and then amend the A/E contract with a revised Exhibit D, Approved State Building Codes. Please note that the state plumbing and electrical boards enforce the editions of their codes that are in effect at the time of permitting not design.

3. The state's code review agents, or the State Buildings Programs approved agency building official, shall review all documents for compliance with the codes stipulated herein. Note: The Department of Public Health and Environment, Division of Consumer Protection will review drawings for food service related projects.
4. This policy does not prohibit the application of various life safety codes as established by each agency for specific building types and funding requirements. NFPA 101 and other standards notwithstanding, approved codes will supersede where their minimum requirements are the most restrictive in specific situations. If a conflict arises, contact State Buildings Programs for resolution.
5. It is anticipated that compliance with the federal Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) and Colorado Revised Statutes Section 9-5-101 will be met by compliance with the 2006 International Building Code and ICC/ANSI A117.1. However, each project may have unique aspects that may require individual attention to these legislated mandates.
6. The 2003 edition of the International Building Code (IBC) is to be applied to factory-built nonresidential structures as established by the Division of Housing within the Department of Local Affairs.

A. **Appendices**

*Appendices are provided to supplement the basic provisions of the codes. Approved IBC Appendices are as follows:*

1. Mandatory
  - IBC Appendix Chapter C - Agricultural Buildings
  - IBC Appendix Chapter I - Patio Covers
2. Optional
  - Any non-mandatory appendix published in the International Building Code may be utilized at the discretion of the agency. Use of an appendix shall be indicated in the project code approach.

B. **Amendments**

None

C. **Referenced Codes**

1. While not adopted in entirety, portions of the following codes are referenced in the International Building Code (IBC), the International Mechanical Code (IMC), the International Energy Conservation Code (IECC) the International Plumbing Code (IPC), and the International Fuel Gas Code (IFGC). These following codes would be applied as reference standards.

2006 International Fire Code (IFC)  
2006 International Existing Building Code (IEBC)

D. **Referenced Standards**

The IBC, IMC, IECC, IPC and IFGC standards shall be utilized to provide specific, or prescriptive, requirements on how to achieve the requirements established in the code. These standards may be unique to the code or may be derived from other established industry standards. Recognized standards may also be used to show compliance with the standard of duty established by the code.

## 1.05 OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA):

- A. The Contractor shall have sole responsibility for compliance on the job site to all applicable portions of the Occupational Safety and Health Act. The Contractor is responsible for other regulatory requirements as they relate to occupational Health and Safety requirements. For example, NIOSH, ANSI, and MSA.
- B. Protection of life, health and public welfare as it relates to the execution of the construction contract is the responsibility of the Contractor. The Owner's Representative may, at their discretion, observe, inspect, or comment on plans, procedures, or actions employed at the project as they relate to safety of life, health or public welfare. If conditions are imposed by the Owner which interfere with, or imply actions detrimental to safety, written notice shall be returned to the Owner for action prior to affecting any unsafe conditions.
- C. Contractors shall use OSHA Lock Out / Tag Out procedures when working with energized equipment.
- D. All contractors entering confined spaces owned by CU or while conducting work under contract with CU shall develop a written program and utilize procedures that, at a minimum, comply with all federal, state and local confined space standards and all applicable regulatory requirements. Contractors shall, independent of the University, monitor the space to obtain their own data to ensure a safe entry and exit. Any data generated by a contractor's confined space entry, should be provided to the Facilities Management confined Space Program Manager.
- E. When contractors perform work that may involve Facilities Management controlled permit required confined spaces, Facilities Management will:
  - 1. Inform contractors of permit required confined spaces and that entry is allowed only after compliance with the confined space entry standard;
  - 2. Require contractors planning to enter a confined space to provide the Facilities Management Confined Space Program Manager in charge of that space, 48-hour advance notice of such planned entry. The contractors entry will be in accordance with the current Occupational Safety and Health Administration confined space entry standard and a signed document stating such, shall be provided to the FM Confined Space Program Manager prior to entry.
- F. The FM Confined Space Program Manager, following receipt of notice of contractor planned entry, will:
  - 1. Apprise contractor of the hazards identified in the confined space and of any prior experience that is documented on the space;
  - 2. Appraise the contractor of any precautions or procedures that CU has implemented for the protection of workers in or near the confined space;
  - 3. Coordinate entry operations with the contractor when both Facilities Management and contractor personnel are working in or around the confined space;
  - 4. Debrief the contractor at the end of the entry operations regarding hazards confronted or created.

## 1.06 HOT WORK PERMITS

- A. All contractors shall be required to obtain a Hot Work Permit, three (3) working days in advance, for work that involves welding, heat treating, grinding, thawing pipe, hot riveting, soldering and brazing, power driven fasteners and similar activities involving spark, flame or heat. Compliance with the requirements of the applicable fire code, the International Building Code, and NFPA Standard 51B are mandatory and all contractors performing hot work activities shall read and understand these code requirements. To obtain a current Hot Work Permit, go to website: <http://fm.colorado.edu/firesafety/hotwork.html>

- B. Contractors shall read and comply with the procedures and requirements for Fire Watch, Fire Alarm Interruption and Fire Suppression Interruption as found on the following websites:

Fire Watch Procedures:

<http://fm.colorado.edu/firesafety/firewatch.html>

Fire Alarm and Detection System Interruption/Outage:

<http://fm.colorado.edu/firesafety/firealarmdetectsys.html>

Fire Suppression System Interruption/Outage:

<http://fm.colorado.edu/firesafety/firesuppressionsystems.html>

- C. No hot work shall be conducted in any campus facility without a hot work permit. Any person or firm who conducts hot work without a permit shall be fined one thousand dollars (\$1,000) for each occurrence and their non-permitted activities shall be stopped immediately until they obtain a hot work permit. Contractor shall be responsible for any damages caused as a result of improper hot work activities or the work stoppage.
- D. Individuals or firms who obtain a permit shall fully read, understand and implement the requirements of the permit. Any person or firm who conducts hot work without the full implementation of the permit requirements shall be fined five hundred dollars (\$500) the first time and one thousand dollars (\$1,000) for subsequent occurrences. When the requirements of the hot work permit are not being implemented, the improper activities shall be stopped immediately until a hot work permit is obtained. Contractor shall be responsible for any damages caused as a result of improper hot work activities or the work stoppage. Any contractor who is found to be in non-compliance a third time, will not be allowed to work on campus until further notice by Facilities Management.
- E. The campus inspectors, project managers and fire marshal shall have the authority to stop improper or non-permitted hot work activities.
- F. The Contractor shall notify the CU Fire Alarm Supervisor to deactivate all smoke alarms in the vicinity of the work prior to any demolition and construction work activity. Failure of the Contractor to comply with the smoke alarm deactivation requirement and cause a false alarm and arrival of the Boulder Fire Department shall be a \$400 fine per occurrence.

#### 1.07 PERMITS

- A. The contractor must obtain a no fee building permit prior to starting work from Office Manager, Facilities Management at (303) 492-2904 in the Planning, Design and Construction Office, Research Laboratory No. 2, 1540 30<sup>th</sup> Street, Boulder, Colorado. Building permits are required on all projects except the following:
1. Fences not over 6 feet high & general landscape work
  2. Retaining walls which are not over 4 feet in height, unless supporting a surcharge of impounding Class I, II or III-A liquids
  3. Platforms, walks and driveways not more than 30 inches above grade and not over any basement or story below.
  4. Painting, papering, and similar finish work that meet the requirements of chapter 8 of UBC. (Uniform Building Code).
  5. Temporary motion picture, television and theater stage sets and scenery. Review for fire-safety issues is required.
- B. The contractor must post the permit(s) in a prominent location at the jobsite including all inspection reports. The contractor shall have an updated set of contract documents available at the jobsite for all inspections.

## 1.08 INSPECTIONS

- A. The Contractor must schedule all required inspections 48 hours in advance by calling (303) 492-2922. CU or their designated inspectors will complete these inspections within 48 hours with the exception of weekends and state holidays.
- B. The contractor is required to arrange for the following inspections:
  - 1. Required inspections: General. Reinforcing steel or structural framework of any part of any building or structure shall not be covered or concealed without first obtaining the approval of the building official.
  - 2. Lath or gypsum board inspection: To be made after 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.
  - 3. Final inspection: To be made after finish grading and the building is completed and ready for occupancy.
  - 4. Special inspection: Special inspection may be required on special projects and special types of construction.
  - 5. Re-inspections: A re-inspection fee may be assessed for each inspection or reinspection when such portion of work for which inspection is called is not complete or when corrections called for are not made.
- C. The Contractor will be responsible for all cost related to re-inspections and will be billed at a rate of \$50.00 per hour for CU re-inspections and at the testing agency bill-out rate for other re-inspections.

## 1.09 UNIVERSITY OF COLORADO SEXUAL HARASSMENT POLICY

- A. Contractors should be aware of and review the University of Colorado at Boulder's policies that prohibit discrimination and harassment on the basis of race, color, national origin, sex, age, disability, creed, religion, sexual orientation or veteran status. These policies are located on the web at: <http://www.colorado.edu/odh/> Contractor personnel must adhere to these policies and conduct themselves in a manner that does not discriminate or harass as a result of interacting with an around the University of Colorado faculty, staff and students and visitors.

## 1.10 FIRE ALARM INTERRUPTION

- A. Contractor shall contact CU Fire Alarm Systems Supervisor at 303-492-0633 prior to all interruptions or shutdowns of fire alarm systems. Interruptions or shutdowns shall be scheduled three (3) working days in advance with CU Fire Alarm Systems Shop, CU Project Manager and building proctor. Contractor shall provide a fire watch as directed by CU Fire Alarm Systems Shop during interruption or shutdown.
- B. The Contractor shall be responsible for preventing nuisance alarm due to activities at their work site. Common sources of nuisance alarms are:
  - 1. Smoke (soldering, welding, cooking, etc.)
  - 2. Grinding
  - 3. Dust (drilling, sweeping, canister vacuums, sand blasting, etc.)
  - 4. Water leaking (plumbing leaks, overflows)
  - 5. Water sprayed on or near detectors (pressure washing or cleaning with water)
  - 6. Popcorn or other food burning in microwaves
  - 7. Static electricity (covering or uncovering detectors)
  - 8. Changing filters on air handling units (dust)
  - 9. Steam (leaks, pressure pop-offs)
  - 10. Broken or frozen sprinkler heads
  - 11. Sprinkler drain valves turned by mistake
  - 12. Vandalism

Precautions to prevent nuisance alarms are:

1. During construction projects, treat all buildings, except totally new construction, as though they were occupied buildings with live systems.
2. Do not assume that all detectors are in plain sight. Contact University personnel for verification.
3. Maintain dust control measures per UCB Standards:
  - a. Maintaining barriers
  - b. Covering air returns
  - c. Asking CU personnel to cap or disable smoke detectors (Note any capping or disabling of fire safety devices is to be done ONLY by CU personnel, not contractors.)
  - d. Avoiding recirculation of dust or smoke through the building air handling system.
4. Follow campus hot work procedures. Refer to specification Section 01060, paragraph 1.06.
3. Do not expose fire alarm devices to water or extreme temperatures.
4. Contact Fire Systems Group for any actions that affect fire detection, alarm, and suppression systems.

#### 1.11 STORMWATER MANAGEMENT PLAN (SWMP)

- A. Stormwater Management Plan (SWMP): Prior to any construction activity disturbing one acre of land or more, an approved SWMP and a Stormwater Permit for Construction Activity application from the Colorado Department of Public Health and Environment (CDPHE) are required. The SWMP shall be prepared in accordance with the CDPHE requirements for "Contents of the Stormwater Management Plan" and the UDFCD's Urban Storm Drainage Criteria Manual, Volume 3, "Best Management Practices" (UDFCD Drainage Criteria Manual). Stormwater quality management and erosion control measures are to be constructed and maintained in accordance with the SWMP and the UDFCD Drainage Criteria Manual.

#### 1.12 ENVIRONMENTAL/STORMWATER POLLUTION PREVENTION

- A. Contractors working on the UCB campus must comply with all applicable University, City, State and Federal environmental regulations and standards. The contractor shall keep material such as saw-cut slurry, drywall mud, grout and mortar, paint, sediment, and all other wastes and process water out of gutters, streets, storm drains and parking lots. The contractor shall also be responsible for proper disposal of all waste materials. Immediately notify 911, EH&S 303-492-6025 and project manager of accidental hazardous materials releases.
- B. Contractors are required to locate drains or other water discharge points in the area of the project and provide measures to protect from illicit discharges, prior to construction activities. For assistance with determining where a drain leads to (storm vs. sanitary, especially floor drains), contact the Facilities Management service center at 303-492-5522.
- C. The contractor shall be responsible for all costs associated with damages and clean-up as a result of contractor caused illicit discharges of process water or other materials into the storm water system. Also, in addition to any penalties or fines imposed by the City, State or Federal agencies, the contractor shall be fined one thousand dollars (\$1,000) by UCB for the first time an incident occurs and may be put on probation from working on campus. The contractor will be prohibited from working on campus, until further notice by UCB, if they are found to be responsible for an illicit discharge a second time.

- D. For the purpose of eliminating storm water pollution, the contractor shall implement effective Best Management Practices (BMPs). BMPs include general good housekeeping practices, appropriate scheduling of activities, operational practices, maintenance procedures and other measures to prevent the discharge of pollutants directly or indirectly to the storm water system. These BMPs shall be maintained for the duration of the contractor's work. Contractors are required to visit website: <http://www.bouldercolorado.gov/www/pace/government/index.html> for examples of BMP's that are applicable to project activities. The Contractor shall ensure that all applicable employees and sub-contractors who work on site are trained and comply with storm water pollution prevention methods and proper BMP's.
- E. In addition to the BMP's the contractor will be required to sign an Environmental Responsibilities form for all projects. The contractor shall post a copy of this form on site, throughout the duration of the project, in a visible area for all workers to see. Also, the contractor will be required to fill out a Pre-Construction Water Quality Certification form indicating any/all potential discharges of process water, chemicals, de-watering, or other materials to sewer systems or landscape areas that are expected to result from project activities.

#### 1.13 UTILITY LOCATES

Contractor MUST CALL 811 (or 1-800-922-1987) for utility locates BEFORE DIGGING on any project at the University of Colorado at Boulder. This includes even small projects such as, but not limited to, planting trees or shrubs, sidewalk removal/installation or fence post installation. Digging without calling can disrupt service to the campus or surrounding neighborhoods and potentially result in fines and repair costs.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included:
  - 1. Specification system format.
  - 2. Grammar (syntax) description.

1.02 DESCRIPTION

- A. These specifications have been derived from automated specification systems, and include minor deviations from format and traditional writing forms. Such deviations must be recognized as a normal result of this production technique, and no other meaning will be implied or permitted.
- B. Imperative language of the technical sections is directed to the Contractor. The term "provide" used repeatedly in the text is defined to mean..."furnish and install, complete, in place and ready for operation and use unless specifically indicated otherwise."
- C. Specifications are of abbreviated, simplified or streamlined type and include incomplete sentences. Omissions of work or phrases such as "the Contractor shall", "in conformity therewith," "shall be," "as noted on the Drawings", "A", "The", are intentional. Supply omitted words or phrases by inference in same manner as they are when "Note" occurs on Drawings. Supply words "on the Drawings" by inference when "as indicated" is used with sentences or phrases.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
  - 1. Remodel Work scheduling.
  - 2. Construction sequence scheduling.
- B. Related Sections:
  - 1. Section 01500 - Temporary Facilities and Controls.

1.02 SYSTEM DESCRIPTION

- A. An essential condition of this Contract shall be the scheduling and conduct of all phases of construction operations in such a manner that the Owner's operations and use of the existing buildings and campus shall be uninterrupted at all times, except for such limited interruption as is required and approved by the owner.
- B. Contractor shall repair at his own expense all damage done to Owner's property, unknown utilities and adjoining public property as a result of Contractor's construction activities.

1.03 PROJECT/SITE CONDITIONS

- A. Access and use of site:
  - 1. Contractor shall use the designated site access for construction offices and material storage in such a manner that access to existing buildings and campus remain accessible at all times for use.
  - 2. Confine operations to as limited a use of the existing building and campus as possible. A route of access to and from the work for employees shall be agreed upon and it shall be the Contractor's responsibility to see that the agreed route is maintained in order to prevent unwarranted or unnecessary traffic through the existing buildings or site.
- B. Owner notice and approval:
  - 1. All arrangements and scheduling in connection with the work of this Contract shall be made with and subject to the approval of the Consultant and the Owner.
  - 2. All work under this Contract which will require interruption of service of the existing building shall be scheduled to suit the need and convenience of the Owner's operation, and arrangements shall be made with the Owner and the Architect at least eight (8) working days in advance of the start of such work.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 REMODELING

- A. Construction activities of all areas to be constructed in existing facilities shall be completely separated from the rest of the building by dust-proof enclosures erected by Contractor.
- B. All surfaces in existing facilities not indicated to be remodeled, or removal of existing items by any Contractor, shall be repaired by the responsible Contractor to match existing adjoining similar surfaces.

3.02 CLEAN-UP

- A. All areas within existing facilities, which are not within enclosed areas to be constructed used for access to work areas shall be completely cleaned of all debris and made "broom-clean" at the end of each day's work.
- B. Dust, which permeates areas of existing facilities because of improperly constructed dust-proof barriers, shall be the responsibility of the Contractor. The Contractor shall employ the services of a professional cleaning company to clean any area outside of the designated construction dust barriers that are contaminated by Contractor's operations. Completely clean all such areas to the satisfaction of the Owner at no additional cost.

END OF SECTION

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 - Specification sections, apply to work of this section.

## 1.02 SUMMARY:

- A. Section Includes:
  - 1. General administrative requirements and procedures for Hazardous Communication Program.
- B. Related Sections:
  - 1. Summary of Work: Section 01010.

## 1.03 WORK BY OWNER:

- A. Asbestos:
  - 1. The Owner has completed an Environmental Site Assessment to identify asbestos containing materials and other immediate Health and Safety items. Do not begin work until Form Exhibit A (copy following the Supplementary General Conditions) has been executed. Where asbestos materials or other hazardous conditions are known to exist in locations affected by this project, remediation measures will be taken by the Owner under separate contract. The Contractor shall coordinate his sequence and schedule with that of the environmental remediation work.
  - 2. In the event that the Contractor encounters any material on the site which is reasonably believed hazardous, which has not been rendered harmless, the Contractor shall:
    - a. Stop work immediately in affected areas.
    - b. Report the condition in writing to the Department of Facilities Management Project Administrator.
    - c. Report the condition in writing to the Architect.
    - d. Resume work only under the provisions of this section.

## 1.04 SUBMITTALS:

- A. Material Safety Data Sheets (MSDS):
  - 1. Copies of all material safety data sheets for all applicable products, including but not limited to; paint, adhesives, mastics, solvents, and finishes, etc., shall be retained on site by the Contractor for all applicable products used during the construction and/or remodeling work. Furnish copies of all MSDS's to the Owner and Architect and include in the Project Record Document submittal.

## 1.05 QUALITY ASSURANCE:

- A. Asbestos containing materials may exist within the general project area where such materials are not expected to be disturbed during the work. The Contractor shall review the Environmental Health and Safety Environmental Site Assessment Form at the project site and become familiar with known asbestos and hazardous containing materials in the work areas.

## 1.06 PROJECT/SITE CONDITIONS:

## A. Hazard Communication Requirements:

1. All Contractors are responsible for compliance with mandatory federal rules and regulations concerning Hazard Communication, including, but not limited to those regulations contained in 29 CFR 1910.1200 Hazard Communication, 1910.146 Confined Space, 1910.147 Lock-out Tag-out, 1910.1101 Asbestos, and 1926.62 Lead. Contractor and all subcontractors working at sites under the control of the Owner shall make available to the Architect, upon request, copies of the Hazard Communication Program used by their firm. In addition to this requirement, all regulations related to Multi-employer workplaces shall be adhered to. These regulations are found in 29 CFR 1910.1200, (e) (2) (I) through (e) (4) specifically:

(e) (2) Multi-employer workplaces. Employers who produce, use, or store hazardous chemicals at workplace in such a way that employees of other employer(s) may be exposed (for example, employees of a construction contractor working on site) shall additionally ensure that the hazard communication programs developed and implemented under paragraph (e) include the following:

(e) (2) (i) The methods the employer will use to provide the other employer(s) with a copy of the material safety data sheet, or to make it available at a central location in the workplace, for each hazardous chemical the other employer(s)' employees may be exposed to while working;

(e) (2) (ii) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and,

(e) (2) (iii) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace

(e) (3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(e) (4) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with requirements of 29 CFR 1910.20 (e).

2. The referenced regulations were excerpted from 29 CFR 1910.1200. This excerpt shall not be relied upon for compliance with mandatory federal, state and local regulations. The Contractor shall comply with all such regulations and shall be solely liable for insuring that all requirements under applicable regulations are met.

## PART 2 - PRODUCTS (Not applicable)

## PART 3 - EXECUTION

## 3.01 EXAMINATION:

## A. Asbestos and Hazardous Materials Discovery:

1. The Contractor is cautioned to be alert to the possibility that his work may uncover asbestos- containing or hazardous materials. If suspected materials are found, the Contractor shall notify the Owner and stop all work in the area immediately. If the suspected materials prove to contain asbestos or hazardous materials, the Owner will arrange to have the materials abated in a timely manner.

## 3.02 HAZARDOUS MATERIALS/EQUIPMENT REMOVAL:

- A. Definition:
1. Removal of hazardous materials/equipment is extremely dangerous. Hazardous materials/equipment is defined to include, but not limited to the following:
    - a. Fume hoods
    - b. Hood exhaust duct work
    - c. Exhaust fans
    - d. Laboratory casework and equipment
    - e. PCB ballast's
    - f. Mercury and Sodium Vapor Lights
    - g. Adjacent material that could come in contact with workers or public.
- B. Protection:
1. Hazardous materials/equipment removal shall include the protection of personnel, material, environment and safe legal disposal of the equipment; and further includes the following:
    - a. Notification of Project Administrator and appropriate Environmental Health and Safety Unit
    - b. Proper protective clothing for personnel involved in the removal.
    - c. Appropriate emergency and first aid facilities.
    - d. Removal procedures shall be accomplished during minimal occupancy of the remainder of the building on the weekends or at night.
- C. Disposal:
1. All equipment related to the use, storage or processing of hazardous materials/equipment shall be removed and properly disposed of under the direct, full-time supervision of a qualified Laboratory Specialist fully conversant with the chemistry and properties of the material/equipment involved. Certification is required. Contractors are responsible for the removal of all hazardous materials/equipment and chemicals from the work site as well as proper disposal of all hazardous waste generated by their project.
  2. Hazardous waste disposal must include prior notification to the Department of Environmental Health and Safety in order to verify that the appropriate procedures and documentation are used. Copies of all paper work for shipping and disposing of these materials (hazardous waste manifests, land disposal restrictions, etc.) will be provided by the Contractor to the Department of Environmental Health & Safety (303) 492-6025. Where appropriate, the Main Campus EPF ID COD007431505 will be used for these shipments.
  3. Hazardous chemicals, waste, and other pollutants may not be discharged to the sanitary or storm sewer systems at anytime. Releases to the environment must be reported to CUPD/EH&S immediately.

END OF SECTION

## PART 1 - GENERAL

## 1.01 REQUIREMENTS

- A. The types and minimum requirements for project meetings are included but are not necessarily limited to the following categories:
- Pre-construction meeting
  - Progress and Coordination meetings
  - Specially called meetings
- B. The pre-construction meeting will be scheduled within fifteen days after date of Notice to Proceed, at a central site location designated by the Owner and convenient for all parties.
1. Attendance:
    - a. Owner's Representative
    - b. Consultant and his sub-consultants, as applicable
    - c. Contractor's Superintendent
    - d. Major Subcontractor(s)
    - e. Others as appropriate
  2. Suggested Agenda:
    - a. Distribution and discussion of:
      - List of major subcontractors and suppliers
      - Projected construction schedules
      - Critical work sequencing
      - Major equipment deliveries and priorities
      - Project Coordination
      - Designation of responsible personnel
    - b. Procedures and processing of:
      - Field decisions
      - Proposal requests
      - Submittals
      - Change Orders
      - Applications for Payment
    - c. Adequacy of Distribution of Contract Documents
    - d. Procedure for Maintaining Record Documents
    - e. Inspections
    - f. Stormwater Management Plan (SWMP)
- C. The Architect/Engineer will: Record the minutes; including significant proceedings and decisions.
- D. The Contractor shall schedule and administer subcontractor and vendor pre-construction meetings throughout progress of the work. He will:
1. Prepare agenda for meetings.
  2. Distribute written notice of each meeting four days in advance of meeting date.
  3. Make physical arrangements for meetings.
  4. Preside at meeting.
  5. Record the minutes; including significant proceedings and decisions.
  6. Representatives of Contractors, Subcontractors, and Suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

7. Use of Premises:  
Office, work, staging and storage areas  
Owner's requirements
8. Temporary construction Facilities, Utilities, Controls and Construction Aids
9. Safety, First-aid, Security and Housekeeping Procedures
10. Administrative Procedures and Documents as Required by Owner

## 1.02 PROGRESS AND COORDINATION MEETING

The Contractor will schedule and administer job progress and coordination meeting at the site.

- A. Attendance:
  1. Owner as needed
  2. Consultant and his sub-consultants as needed
  3. Subcontractor as appropriate to the agenda
  4. Suppliers as appropriate to the agenda
  5. Others
- B. Suggested Agenda:
  1. Review of work progress since previous meeting.
  2. Field observations, problems and conflicts.
  3. Problems which impede Construction Schedule.
  4. Review of off-site fabrication and delivery schedules.
  5. Corrective measures and procedures to regain projected schedule.
  6. Revisions to Construction Schedule.
  7. Coordination of schedules.
  8. Progress and schedule during succeeding work period.
  9. Review submittal schedules and expedite as required.
  10. Maintenance of quality standards.
  11. Pending changes and substitutions.
  12. Review proposed changes for:
    - a. Effect on Construction Schedule and on completion date.
    - b. Effect on other contracts of the Project.
- C. The Architect/Engineer shall record and distribute the minutes of all progress meetings throughout the construction period and shall visit the site a minimum of once every two weeks. The Architect/Engineer shall average one visit per week during construction.

The structural engineer shall visit the site immediately prior to every major structural concrete slab pour; every major foundation wall pour; at least twice for each major segment of work [i.e., caissons, columns, steel roof joists, etc].

END OF SECTION

## PART 1 - GENERAL

## 1.01 DESCRIPTION OF WORK

- A. Submit shop drawings, product data and samples as required by various sections of the specifications.

## 1.02 QUALITY ASSURANCE

- A. Shop Drawings:
  - 1. Drawings shall be presented in a clear and thorough manner.
  - 2. Details shall be identified by reference to sheet, detail, schedule, or room numbers shown on drawings.
- B. Product Data:
  - 1. Preparation:
    - a. Clearly mark each copy to identify pertinent products or models.
    - b. Show performance characteristics and capabilities.
    - c. Show dimensions and clearances required.
    - d. Show wiring or piping diagrams and controls.
  - 2. Manufacturer's standard schematic drawings and diagrams.
    - a. Modify drawings and diagrams to delete information that is not applicable to the work.
    - b. Supplement Standard information to provide information specifically applicable to the work.
- C. Samples:
  - 1. Office samples shall be of sufficient size and quantity to clearly illustrate:
    - a. Functional characteristics of the product with integrally related parts and attachment devices.
    - b. Full range of color, texture and pattern
- D. Mock-ups:
  - 1. Provide complete mock-up of exterior materials to be incorporated into the work.
    - a. Mock-up shall include a sample of all materials used in exterior construction, whether specified elsewhere or not in these documents, including but not limited to, masonry, stone, window systems, precast concrete, roof systems, flashing, sealants, masonry paving, paint and other readily visible materials.
    - b. Secure Owner approval of mock-ups prior to ordering and placement of materials. Modify mock-ups as directed by the Architect or Owner until acceptable.
    - c. Confirm exact mock-up(s) required by Owner prior to fabrication of mock-up(s).
  - 2. Remove mock-up at the conclusion of the project or when directed by the Architect.
    - a. Restore or finish site to finish condition indicated on the Drawings.
- E. Responsibilities of the Contractor:
  - 1. Review shop drawings, product data, samples and project record drawings for specification performance prior to submission.

2. Determine and Verify:
  - a. Field measurements
  - b. Field construction criteria
  - c. Catalog numbers and similar data
  - d. Conformance with specifications
3. Coordinate each submittal with requirements of the work and of the Contract Documents.
4. Notify the Consultant in writing, at the time of submission, of any deviations in the submittals for requirements of the Contract Documents.
5. Begin no fabrication or work that requires submittals until return of submittals with Consultant's acceptance.
6. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Consultant's review of submittals.
7. Contractor shall stamp, sign or initial, and date each submittal to show compliance with the Contract Documents prior to submittal to the Consultant.

### 1.03 SUBMITTALS

- A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the work.
- B. Number of Submittals Required:
  1. Shop Drawings: Submit one reproducible transparency and four opaque reproductions. Three copies will be retained by the Consultant.
  2. Product Data: Submit seven copies, three of which will be retained by the Consultant.
  3. Samples: Submit the number stated in each specification section.
- C. Submittals shall contain:
  1. Date of the submission and dates of any previous submissions.
  2. Project title and number.
  3. Contract identifications.
  4. Names of:
    - a. Contractor and Subcontractor(s), if applicable.
    - b. Supplier
    - c. Manufacturer
  5. Identification of product with the specification section number.
  6. Field dimensions, clearly identified as such.
  7. Relation to adjacent or critical features of the work or materials.
  8. Applicable standards, such as ASTM or Federal specification numbers.
  9. Identification of deviations from Contract Documents.
  10. Identification of revisions on resubmittals.
  11. An 8"x3" blank space in lower right-hand corner for review stamps.
- D. Resubmission Requirements:
  1. Make any corrections or changes in the submittals required by the Consultant and resubmit until accepted.
  2. Shop drawings and product data:
    - a. Revise initial drawings or data and resubmit as specified for initial submittal.
    - b. Indicate any changes that have been made, other than those requested by the Consultant.

3. Samples: Submit new samples as required for initial submittal.
- E. Distribution:
1. Distribute reproductions of approved shop drawings and copies of product data to affected subcontractors and retain one copy for use at the job-site.
  2. Distribute approved samples as directed.
- F. Consultant's Duties:
1. Review submittals with reasonable promptness and in accordance with schedule.
  2. Review of separate item does not constitute review of an assembly in which item functions.
  3. Affix stamp and initials or signature, and indicate requirements for resubmittal or acceptance of submittal.
  4. Return submittals to the Contractor for distribution or for resubmission.
- G. Schedule of Values and pay applications:
1. Submit typed schedule on State Form SC7.2; Contractor's standard form or media-driven printout will be considered on request.
  2. Format: Table of Contents of this Project Manual.
  3. Include in each line item a directly proportional amount of Contractor's overhead and profit.
- H. Schedule of Submittals: The Contractor shall submit the submittals required by the specifications. The Contractor shall develop a submittal schedule that confirms the submittals and the time frame for review by the consultants.
- I. Construction Schedule:
1. The Contractor shall submit a critical-path method (CPM) construction schedule prior to start of construction activities. The CPM schedule shall include notice to proceed, submittal activities, construction activities, change order work (when applicable), close-out, testing, demonstration, and acceptance. The CPM shall correlate specifically to the schedule of values line items and be cost loaded.
- Float, slack time, or contingency within the schedule (i.e., the difference in time between the project's early completion date and the required contract completion date), and total float within the overall schedule, is not for the exclusive use of either the principal representative or the Contractor, but is jointly owned by both and is a resource available to and shared by both parties as needed to meet contract milestones and the contract completion date.
- The Contractor will be required to submit an as-built progress CPM schedule with each progress billing. This CPM schedule will be the basis for making progress payments. The level of detail and quantity of work activities in the CPM schedule should be negotiated with the principal representative prior to starting construction.
- J. Progress Photos
1. The Contractor shall submit up to 12 - 3x4 inch progress photos with each progress payment. The photos should demonstrate the work in place and be dated with a short description of the photographed item.

- K. Coordination Drawings:
1. The Contractor shall submit coordination drawings with all mechanical, electrical, fire protection, and building monitoring systems prior to the Consultant review of any shop drawings or submittals for work in those trades. Approval of required shops and submittals must be obtained prior to starting work, and must be obtained prior to approval of pay applications of the work. The drawings shall be created to include all trades on a particular level of the building on one drawing. Identify conflicts between the systems or between the systems and architectural elements such as ceiling heights, ceiling types, or walls. Conduit routing for electrical, mechanical, energy management system, and security trades shall be included. Identify potential solutions to the conflicts for the Consultant and Owner to review during the submittal process. Revise the coordination drawings to show any comments made during the submittal review process, and reissue for use by all affected trades, Owner and Consultant.
  2. The Coordination drawings shall include sectional coordination documents. Identify elevations of systems A.F.F. (above finish floor) and component dimensions. Show elevations whenever component changes height.
- L. Daily Reports
1. The contractor shall submit daily reports, due by 5 p.m. the following day. The report should include weather, equipment, manpower count, subcontractors on site, short description of work for that day, inspections, visitors, items that may affect progress or quality of project.
- M. Request for Information (RFI):
1. The Contractor will be responsible for submitting RFIs on AIA form G716 or similar. The RFI should identify in writing any unclear, inconsistent, or conflicting item in the documents that could not be answered by thorough review by the Contractor or subcontractors. The RFI should include a description of the item and a proposed solution. The RFI should indicate schedule or cost impact, if any. Contractor shall be required to submit cost or schedule impact within seven days of receipt of the RFI response. Each RFI shall be numbered in sequence.
- N. Weekly Logs:
1. The Contractor shall provide an updated RFI, change request, and submittal logs at weekly construction meetings. Contractor shall provide a 2-week detailed construction schedule at the weekly construction meeting.

## PART 2 - MATERIALS

Not used.

## PART 3 - EXECUTION

Not used.

END OF SECTION

## PART 1 - GENERAL

## 1.01 SUPPLEMENTAL TESTING

If required, the following testing shall be performed at the expense of the contractor installing the material being tested:

- A. Material Substitution: Any tests of basic material or fabrication equipment offered as a substitute for specified item on which a test may be required in order to prove its compliance with the specifications.
- B. Mechanical/Electrical: Tests on mechanical and electrical systems required to insure their proper installation and operation.
- C. Any test that fails shall be paid for by the installing contractor subject to the following conditions:
  - 1. Quantity and nature of tests will be determined by the Consultant.
  - 2. All test shall be done in the presence of the Owner or his representative.
  - 3. Proof of noncompliance will make the installing contractor liable for any corrective action which the Owner feels is prudent including complete removal and replacement of defective material.

Nothing contained herein is intended to imply that the installing contractor does not have the right to have tests performed on any material at any time for his own information and job control so long as the Consultant or Owner does not assume responsibility for costs or for giving them consideration when appraising quality of materials.

- D. The Consultant shall determine the type and number of tests to be performed on the project.

## 1.02 TEST REPORTS

Reports of all tests made by testing laboratories shall distributed by the testing laboratory as follows:

- 1 copy - Contractor
- 1 copy - Applicable supplier or subcontractor
- 1 copy - Owner
- 1 copy - Consultant
- Other copies - as directed

## 1.03 QUALITY CONTROL SYSTEM

- A. General: The contractor shall establish a quality control system to perform sufficient inspection and tests of all items of work, including that of all subcontractors, to ensure conformance to the Contract Documents for materials, workmanship, construction, finish, functional performance and identification. This control shall be established for all construction except where the Contract Documents provide for specific compliance tests by testing laboratories or Consultants employed by the Owner.

The quality control system is the means by which the Contractor assures that construction complies with the requirements of the Contract Documents. Controls shall be adequate to cover all construction operations and should be keyed to the proposed construction schedule.

- B. The Contractor shall designate a quality control representative on staff to review the work to insure compliance with the contract documents by weekly jobsite visits for observation. The designated employee shall not be involved in the performance of the work. The quality control representative shall review the work and make necessary corrections to bring the work into compliance prior to scheduling the Architect for the final punchlist review.
  
- C. Records: The Contractor shall maintain correct records on an appropriate form for all inspections and tests performed, instruction received from the Owner and actions taken as a result of those instructions. These records shall include evidence that the required inspections or tests have been performed (including type and number of inspections or tests, nature of defects, causes for rejection, etc.) proposed or directed remedial action, and corrective action taken. The Contractor shall document inspections and tests as required by each Section of the Specifications.

#### 1.04 INDEPENDENT TESTING AGENCY SERVICES

- A. The Owner will employ and pay for the services of an independent Testing Agency to perform the Inspections, special inspections, tests and other services when required by sections of the specification. Services shall be performed in accordance with requirements of governing authorities and with specified standards.
  - 1. Contractor shall cooperate with Testing Agency personnel and shall furnish tools, sample of materials, design mixes, equipment and assistance as requested.
  - 2. Contractor shall provide and maintain, for the sole use of the Testing Agency, adequate facilities for the safe storage and proper curing of concrete testing cylinders on the project site for the first 24 hours after casting as required by ASTM C 31, Method of Making and Curing Concrete Test Specimens in the field.
  - 3. Contractor shall notify Testing Agency sufficiently in advance of operations to allow for completion of initial tests and proper assignment of inspection personnel.
  - 4. Contractor shall notify the testing agency sufficiently in advance of cancellation of required testing operations. The Contractor shall assume responsibility for costs incurred due to the failure to provide such notice.

END OF SECTION

## PART 1 - GENERAL

## 1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.

## 1.02 DESCRIPTION OF REQUIREMENTS

- A. This section of the General Requirements outlines the basic requirements for temporary services, utilities, and facilities which will indirectly enable adequate construction progress and processes, and will accommodate other necessary activities at the project site except as otherwise indicated, the costs of providing and using temporary services are included in the Contract Sum.

## 1.03 QUALITY ASSURANCE

- A. Comply with governing regulations and utility company regulations and recommendations for the construction of temporary facilities, including but not necessarily limited to, code compliance, permits, inspections, testing, and health and safety compliance.

## 1.04 SITE CONDITIONS

- A. Provide Temporary facilities and services at the time first needed at the site and maintain, expand, and modify the facilities as needed throughout the construction period and do not remove until no longer needed.

## PART 2 - EXECUTION

## 2.01 GENERAL

- A. Use qualified tradesmen for the installation of temporary facilities. Locate facilities where they will serve the total project construction work adequately and result in minimum interference with performance of the work. Relocate, modify, and extend facilities as required during the course of the work to properly accommodate the entire work of the project.

## 2.02 TEMPORARY FACILITIES

- A. Temporary Water: Connect to existing water source as designated by the Owner for construction operations.
- B. Temporary Telephone: Provide, maintain and pay for telephone service to field office at time of project mobilization. If a mobile phone is designated as the field office phone then it shall be a local number.
- C. Sanitary Facilities: Comply with governing regulations, including safety and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install sanitary facilities in available locations which will best serve the needs of personnel at the project site. Toilet rooms in existing buildings or in new construction may not be used without written approval of the Owner.

- D. Temporary Heat and Ventilation: Provide such OSHA approved heat and fuel, heating units, equipment as necessary to provide the required environmental conditions and to protect the work from damage due to cold. Maintain equipment in a clean, safe condition.
- E. Fire Extinguisher:
1. Except as otherwise indicated or required, comply with the applicable recommendations of NFPA No. 10 "Portable Fire Extinguisher" for each area of each construction activity whenever combustible materials, flammable liquids, and similar exposures to possible fires are present.
  2. Locate extinguisher where most convenient and effective for the intended purposes. Store combustible materials in recognized fire-safe locations and containers.
- F. Protection
1. Barricades, Warning Signs, and lights: Comply with recognized standards and code requirements for the erection of substantial and structurally adequate barricades wherever needed to prevent accidents and losses. Paint with appropriate colors, graphics and warning signs to inform personnel at the site and the general public where exposure exists of the hazard being protected. Provide lighting where appropriate and needed for the recognition of the facility, including flashing red lights where appropriate.
- G. Temporary Enclosure: Wherever required, provide temporary enclosure of materials, equipment, work in progress, and completed portions of work, so as to afford protection for both the work and employees.
- H. Miscellaneous Facilities:
1. Provide ladders, ramps, and temporary stairs for access to all levels of the construction for general access by all trades, Individual contractors and subcontractors shall furnish their own stepladders, scaffolds, staging, work platforms, and other facilities for use of their workmen and as necessary for safety of all personnel.
- I. Field Office:
1. The Contractor shall provide and maintain a suitable temporary field office for his own use. Offices and all other temporary structures shall be removed from the site upon completion of the work.
  2. Temporary structures or storage used for storage and offices for contractors shall be located on the site in an orderly manner as determined by the Owner.

### 2.03 OPERATIONS AND TERMINATIONS

- A. Supervision: Enforce strict discipline in the use of temporary facilities at the project site. Limit availability of facilities to essential and intended uses, so as to minimize waste and possibility of abuses and the resulting unsanitary and hazardous or dangerous conditions.

- B. Maintenance: Operate and maintain temporary facilities in good operating condition through the time of use and until removal is authorized. Protect from damage by freezing temperatures and similar elements at the site.
  
- C. Termination and removal: At the time the need has ended for each temporary facility, or when it has been replaced by authorized use of a permanent facility, or at the time of Substantial completion, promptly remove the facility unless requested by the Consultant to be retained for a longer period of time. Complete or restore permanent work which may have been delayed or otherwise affected by the temporary facility. Replace work which cannot be satisfactorily restored. Except as otherwise indicated, the materials and equipment of temporary facilities remain the property of the contractors.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
  - 1. Products.
  - 2. Transportation and Handling.
  - 3. Storage and Protection.
  - 4. Manufacturer's Instructions.
  - 5. Product Options.
  - 6. Products List.
  - 7. Substitutions.
  - 8. Systems Demonstration.
- B. Related Sections:
  - 1. Section 01400 - Quality Control.
  - 2. Section 01730 - Operation and Maintenance Data.

1.02 QUALITY ASSURANCE

- A. Conform to applicable specifications and standards.
- B. Comply with size, make, type and quality specified, or as specifically approved in writing by the Consultant.
- C. Manufactured and Fabricated Products:
  - 1. Two or more items of the same kind shall be identical, by the same manufacturer.
  - 2. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.

1.03 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

1.04 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer' instruction, with seals and labels intact and legible.
- B. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

1.05 MANUFACTURER'S INSTRUCTIONS

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including one copy to the Consultant and one copy to the Contractor.

- B. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.06 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.
- C. Consultant will review requests for substitutions with reasonable promptness, and notify, by Addendum, of the decision to accept or reject the requested substitution.

1.07 PRODUCT LIST

- A. Within 15 days after signing of agreement, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

1.08 SUBSTITUTIONS

- A. Will only be considered prior to bid or in the event that Equipment is not available.**

1.09 SYSTEMS DEMONSTRATION

- A. Prior to final inspection, demonstrate operation of each system to Consultant and Owner.
- B. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

## PART 1 - GENERAL

## 1.01 SUBSTANTIAL COMPLETION AND FINAL INSPECTION

- A. The Contractor shall comply with procedures stated in the General Conditions of the Contract for Notice of Completion, Final Inspection, Notice of Substantial Completion and Notice of Acceptance.
- B. Should the Architect/Engineer or the Principle Representative determine that the work is not substantially complete, or the punch list items exceed 25, he will immediately notify the Contractor, in writing, stating reasons. After Contractor completes work, he shall resubmit certification and request for final inspection. The Contractor will be responsible for all costs beyond two Architect/Engineer walk-throughs.
- C. Owner may occupy designated portions of the Project under provisions stated in the General Conditions of the Contract.

## 1.02 CLOSE-OUT FORMS

The Architect/Engineer will complete the Notice of Approval of Beneficial Occupancy, Closing-out Checklist and Contract Close-out forms and forward them to the Contractor. Comply with procedures stated in General Conditions of the Contract.

## 1.03 FINAL SETTLEMENT AND PAYMENT

- A. Contractor shall comply with procedures stated in the General Conditions of the Contract before final settlement and payment are made.
- B. The Contractor shall also submit the following prior to the final application for payment:
  - 1. Contractor's Affidavit of Payment of Debit and Claims: AIA G706.
  - 2. Contractor's Affidavit of Release of Liens (claims): AIA G706A, with:
    - a. Consent of Surety to final payment: AIA G707
    - b. Contractor's release of waivers of claims.
    - c. Separate release of waivers of claims for subcontractors, suppliers and others with claim rights, against property of owner, together with list of those parties.

## 1.04 GUARANTEE INSPECTION

- A. The Contractor shall comply with procedures stated in the General Conditions of the Contract for Guarantee Inspections after completion of the work.

## 1.05 WARRANTIES AND SPECIAL GUARANTEES

The Contractor shall comply with procedures and criteria outlined in the General Conditions of the Contract for all warranties and special guarantees of the work.

## 1.06 OPERATING AND MAINTENANCE DATA

- A. Refer to Section 01730 - Operating and Maintenance.
- B. Mechanical - By Mechanical Contractor: See Division 15.

- C. Electrical - By Electrical Contractor: See Division 16.

1.07 DEMONSTRATIONS

- A. Refer to Section 01730 - Operating and Maintenance
- B. Mechanical - By Mechanical Contractor: See Division 15
- C. Electrical - By Electrical Contractor: See Division 16.

1.08 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, and maintenance materials in quantities specified in each Section, in addition to that used for construction of work. Coordinate with Owner, deliver to Project site and obtain receipt prior to final payment.
- B. At the completion of the project, all loose keys for hose bibs; adjustment keys and wrenches for door closers and panic hardware; and keys for electric switches, electrical panels, etc., shall be accounted for by the Contractor and turned over to the Owner.

END OF SECTION

## PART 1 - GENERAL

## 1.01 CLEANING

- A. Clean-up During Construction: Each contractor shall keep the building and premises free from all surplus material, waste material, dirt and rubbish caused by his employees or work, and at the completion of his work he shall remove all such surplus material, waste material, dirt and rubbish, as well as his tools, equipment and scaffolding, and shall leave his work clean and spotless, unless more exact requirements are specified. In case of dispute, the owner may remove all such items and charge the cost of such removal to the contractor.

Each sub-contractor shall perform his clean-up daily and shall transport his rubbish to an on-site location designated by the Contractor who will arrange for its removal.

- B. Cleaners: With the exception of clean-up of the site and cleaning specifically assigned to Contractors under various sections of the specifications, all final clean-up of exterior and interior of the building shall be done by professional cleaners.

C. Final Clean-up:

1. Exterior: In addition to items specified below, any new surfaces on exterior, concrete, metal, etc., shall be carefully and thoroughly cleaned.
2. Glass: Both sides of all glass in work areas shall be carefully and thoroughly cleaned by professional window cleaners and left absolutely clean and free from paint, grease, dirt, etc.
3. Hardware: Clean and polish all hardware and leave clean and free from paint, grease, dirt, etc.
4. Plumbing: Clean and polish all plumbing fixtures, fittings, and exposed plated piping. Leave clean and free from paint, grease, dirt, etc. Remove all labels.
5. Electrical: Clean and polish all electric fixtures, including glassware, switch plates, etc. and leave clean and free from paint, grease, dirt, etc.
6. Equipment: Carefully and thoroughly clean all items of equipment, mechanical, electrical, cabinets, ductwork, etc.
7. Floors: Thoroughly clean all floors. Vacuum and clean carpeting. Shampooing of pre-existing carpet is required once project is complete. Contractor is responsible for this.
  - a. Contractors are responsible for cleaning (stripping floors if necessary) then applying the required two coats of sealer and three coats of finish before releasing the building for occupancy. Facilities Management will provide a contact person for help concerning campus standards free of charge. Or Custodial floor care services may be sub-contracted out through Facilities Management's work order system.
  - b. Facilities Management Approved Sealers and Finishes for Vinyl Tile Flooring:

CU requires floor care products to be from the same product line. (Different brands may interact disastrously).

All of these products may be ordered through Construction Stores, but these products not stocked at Stores, please place orders at least two weeks in advance.

Strippers:	<b>JohnsWax</b> Freedom Full Impact	<b>Butchers:</b> Time Buster	<b>Airkeim:</b> Air Strip
Sealers:	Over & Under Technique	Iron Stone	Laser, Gemini
Finishes:	Show Place Above	MainStay	Laser, Gemini

Campus safety standards require at least TWO (2) coats of Sealer be applied to a cleaned floor, **and** at least THREE (3) coats of Finish must be applied on top of the sealer.

- c. Floor Cleaning Procedures:
1. Sweep floor clean of debris
  2. Cord off area if necessary
  3. Put up Caution signs
  4. Mix Stripper or Cleaning solution according to label
  5. Apply solution to floor
  6. Start setting up equipment
  7. Place RED abrasive pad on buffer (buffer less than 300 rpms)
  8. Begin stripping or cleaning floor working with buffer moving it side to side across the floor.
  9. Use HEPA filtered water vacuum to begin to suck up slurry\*  
\*use of HEPA filtered water vacuum is required on existing floor tile which contains asbestos.
  10. Apply additional coats of water and re-vacuum up floor
  11. Mop floor with clean water, change rinse water often
  12. Mop floor a second time
  13. Mop floor to dry completely
  14. Clean up equipment
  15. Wash red pad with clean water.
- d. Sealing Procedures:
1. Using a new mop head or clean wax mop and clean bucket, apply first coat of approved sealer to floor
  2. Allow floor to dry completely (at least 20 minutes)
  3. Apply second coat of sealer
  4. Allow floor to dry
- e. Finishing (Waxing) Procedures:
1. Using a clean wax mop and bucket apply first coat of approved finish (wax)
  2. Allow floor to dry completely (at least 20 minutes)
  3. Apply second coat of finish (wax)
  4. Allow floor to dry completely (at least 20 minutes)
  5. Apply third coat of finish (wax)
  6. Allow floor to dry completely (at least 30 minutes)
  7. Wash mop and bucket with clean water
  8. If floor is dry - remove caution signs and open area up

- f. Burnishing Procedures:  
The next working day
  1. Sweep floor clean of debris
  2. Spot mop floor to remove spots and dirt
  3. Set up High Speed Burnisher to make for a safe environment
  4. Start Burnishing. Walk forward in a straight line
  5. At end of row, turn around and start forward again
  6. Repeat steps 5 & 6 until finished
  7. Clean up equipment and pad.
  
- E. Completion: The entire work inside and out, and the entire premises shall be in first-class, clean condition upon completion before being accepted by the Owner.

END OF SECTION

## PART 1 - GENERAL

## 1.01 SUMMARY

- A. This section describes the definitions, recording and maintenance requirements and the submittal requirements for record documents.

## 1.02 DEFINITIONS

- A. The Project Record Documents are intended to indicate all changes and deviations from the original contract documents and permanently record the “as-built” condition of material, equipment and structure. The project record documents shall include the contract drawings, project manual, addenda, change orders, modifications and clarifications, field directives, approved shop drawings, approved product data, manufacturer’s certificates and project test results.

## 1.03 SUBMITTALS

- A. Submit the project record documents in conformance with Section 01700 and prior to the final applications for payment. The final application for payment will not be approved prior to the submittal of record documents.

## 1.04 QUALITY ASSURANCE

- A. The project record documents shall be updated at a minimum on a weekly basis and shall be readily available for inspection by the owner and consultants. Maintain a separate set of complete documents for exclusive use of record documents and protect the documents from damage in a clean, dry location. Note: Progress applications for payment will not be approved if record documents are not current.
- B. The record documents shall contain a clear, legible record of all detail and dimensional changes and locate all concealed work including, but not limited to:
  - 1. Interior and Exterior Utilities
  - 2. Valves
  - 3. Dampers
  - 4. Controls
  - 5. Junction Boxes
  - 6. Clean-outs
  - 7. Access Doors
- C. The project manual (specifications) shall indicate all manufacturers’ products complete with catalogue number and trade name of products installed. All changes and corrections to the project manual shall be clearly indicated.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Compile product data and related information appropriate for the University of Colorado's maintenance and operation of products furnished.
- B. Prepare operating and maintenance data as specified in this section and as referenced in other pertinent sections of specifications.
- C. Instruct the University of Colorado, Facilities Management personnel in the maintenance of PRODUCTS and in the operation of equipment and systems.

1.02 QUALITY ASSURANCE

- A. Preparation of data shall be done by personnel:
  - 1. Trained and experienced in maintenance and operation of the described products.
  - 2. Completely familiar with requirements of this section.
  - 3. Skilled as a technical writer to the extent required to communicate essential data.
  - 4. Skilled as a draftsman competent to prepare required drawings.

1.03 SUBMITTALS

- A. Prepare data in the form of an instructional manual for use by the University of Colorado, Facilities Management personnel. Quantities are listed in Part 1.07.
- B. Format:
  - 1. Submit electronically in **Portable Document Format** (PDF) format as one document, OCR (Optical Character Recognition) searchable, bookmarked according to the Construction Specifications Institute (CSI) standards.
  - 2. Title shall be "OPERATING AND MAINTENANCE INSTRUCTIONS", and shall include:
    - a. Name of project and date of completion (month and year).
    - b. Project number.
    - c. Identify of general subject matter covered in the manual (e.g., Architectural, Mechanical, Electrical and/or Civil).

1.04 CONTENT OF MANUAL

- A. An electronically-written table of contents shall be provided for each volume, arranged according to CSI standards.  
Include the following:
  - 1. Name of responsible installing principal contractor, address, and telephone number.
  - 2. A list of each product being included, indexed to the content of the volume.
  - 3. List with each product, the name, address, and telephone number of:
    - a. Maintenance contractor, as appropriate.
    - b. Identity of the area of responsibility of each.
  - 4. Identify each product by product name and other identifying symbols.

- B. Product Data:
  - 1. Local source of supply for parts and replacement.
  - 2. Include only those sheets that are pertinent to the specific product, with the following information.
    - a. Clearly identify the specific product or part installed.
    - b. Clearly identify the data applicable to the installation.
    - c. Delete references to inapplicable information.
- C. Drawings:
  - 1. Supplement product data with drawings as necessary to clearly illustrate:
    - a. Relations of component parts of equipment and systems.
    - b. Control and flow diagrams.
  - 2. Coordinate drawings with information in project record drawings to ensure correct illustration of completed installation.
  - 3. Do not use project record drawings as maintenance drawings.
- D. Provide written text, as required, to supplement product data for the particular installation:
  - 1. Organize in a consistent format under separate headings for different procedures.
  - 2. Provide a logical sequence of instructions for each procedure.
- E. Provide a copy of each warranty, bond, and service contract issued. Provide information sheets for the University of Colorado, Facilities Management's personnel and give:
  - 1. Proper procedures in the event of failure.
  - 2. Instances that might affect the validity of warranties or bonds.

1.05 MANUALS FOR ARCHITECTURAL MATERIAL AND FINISHES

- A. Submit copies (per schedule shown in paragraph 1.07) of complete manual in final form.
- B. Content for architectural products include applied materials and finishes.
  - 1. Manufacturer's data, giving full information on products.
    - a. Catalog number, size, and composition.
    - b. Color and texture designations.
    - c. Information required for reordering special manufactured products.
  - 2. Instructions for care and maintenance:
    - a. Manufacturer's recommendation for types of cleaning agents and methods.
    - b. Cautions against cleaning agents and methods that are detrimental to the product.
    - c. Recommended schedule for cleaning and maintenance.
- C. Content for moisture-protection and weather-exposed products:
  - 1. Provide manufacturer's data, giving fully information on products.
    - a. Applicable standards
    - b. Chemical composition
    - c. Details of installation
  - 2. Provide instructions for inspection, maintenance, and repair.

1.06 MANUAL FOR NON-ARCHITECTURAL EQUIPMENT AND SYSTEMS

- A. Submit copies (per schedule) of complete manual in final form.
- B. Content for each unit of equipment and system, as appropriate shall contain:
  - 1. Description of unit and component parts (Consultant-approved submittals).
    - a. Function, normal operating characteristics, and limiting conditions.
    - b. Performance curves, engineering data, and tests.
    - c. Complete nomenclature and Commercial number of all replaceable parts.
  - 2. Operating Procedures:
    - a. Start-up, break-in, routine, and normal operating instructions.
    - b. Regulation, control, stopping, shutdown, and emergency instructions.
    - c. Summer and winter operating instructions.
    - d. Special operating instructions.
  - 3. Maintenance Procedures:
    - a. Routine operations.
    - b. Guide to troubleshooting.
    - c. Disassembly, repair, and reassembly.
    - d. Alignment, adjustment, and checking.
  - 4. Servicing and Lubrication Schedule, including a list of lubricants required.
  - 5. Manufacturer's operating and maintenance instructions.
  - 6. Description of sequence of operation by control manufacturer.
  - 7. Original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance and replacement.
    - a. Predicted life of parts subject to wear.
    - b. Items recommended to be stocked as spare parts.
  - 8. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
- C. Content for each electric and electronic system, as appropriate, shall contain:
  - 1. Description of system and component parts:
    - a. Function, normal operating characteristics, and limiting conditions.
    - b. Performance curves, engineering data, and tests.
    - c. Complete nomenclature and Commercial number of replaceable parts.
  - 2. Operating Procedures:
    - a. Routing and normal operating instructions.
    - b. Sequences required.
    - c. Special operating instructions.
  - 3. Maintenance Procedures:
    - a. Routing operations.
    - b. Guide to troubleshooting.
    - c. Disassembly, repair, and reassembly.
    - d. Adjustment and checking.
    - e. Manufacturer's printed operating and maintenance instructions.
    - f. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
- D. Prepare and include additional data when the need for such data becomes apparent during instruction of the University of Colorado, Facilities Management's personnel.

1.07 OPERATION & MAINTENANCE MANUAL

- A. Operations and Maintenance Manuals – all disciplines – submit electronically in **Portable Document Format** (PDF) format as one document, OCR (Optical Character Recognition) searchable, bookmarked according to the Construction Specifications Institute (CSI) standards.

1.08 SUBMITTAL SCHEDULE

- A. Submit one electronic copy to the Consultants and one to the University of draft of proposed formats and outlines of contents upon completion of the submittal process. The Consultants and the University staff will review the draft and will submit comments through the consultants.
- B. Submit electronic copies of complete manual(s) in final form 15 days prior to final inspection or acceptance. Comments will be submitted after final inspection.
- C. Submit specified number of CDs or DVDs of approved data in final form prior to acceptance.

1.09 INSTRUCTION OF UNIVERSITY OF COLORADO, FACILITIES MANAGEMENT PERSONNEL

- A. Fully instruct the University of Colorado, Facilities Management personnel's designated operating and maintenance personnel in the operation, adjustment, and maintenance of all products, equipment, and systems as required elsewhere in the specification.
- B. Operating and Maintenance manual may be required as the basis of instruction.

PART 2 - MATERIAL

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Prepare commissioning process based on the Commissioning Checklists found in the UCB Standards website:

**<http://fm.colorado.edu/construction/standards/>**

- B. Coordinate the requirements of Project Closeout and Operating and maintenance sections that are part of Division 1.
- C. Schedule the required commissioning activities with the University of Colorado Facilities Department and their consultants at least 72 hours prior to conducting Commissioning activities.

PART 2 - MATERIALS

Not Used.

PART 3 - EXECUTION

NOT USED

END OF SECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
  - 1. Construction Storm Water Requirements
  - 2. Post-Construction Storm Water Requirements
- B. Related Sections
  - 1. Section 02200 - Earthwork
  - 2. Section 02221 – Trenching, Backfilling, Compaction

1.02 QUALITY ASSURANCE

- A. All construction sites
  - 1. All construction sites that disturb any land must take appropriate erosion control and stormwater detention measures to contain water run-off from site.
- B. Construction sites – one acre and larger
  - 1. All construction sites that are one acre and larger must prepare and submit a Storm Water Management Plan (SWMP) for approval before any work begins. The SWMP must conform to all the requirements contained herein.

1.03 SUBMITTALS

- A. Storm Water Management Plan (SWMP)

Storm Water Management Plan (SWMP): Prior to any construction activity disturbing one acre of land or more, an approved SWMP and a Stormwater Permit for Construction Activity application from the Colorado Department of Public Health and Environment (CDPHE) are required. The SWMP shall be prepared in accordance with the CDPHE requirements for “Contents of the Stormwater Management Plan” and the UDFCD’s Urban Storm Drainage Criteria Manual, Volume 3, “Best Management Practices” (UDFCD Drainage Criteria Manual). Stormwater quality management and erosion control measures are to be constructed and maintained in accordance with the SWMP and the UDFCD Drainage Criteria Manual.

PART 2 – MATERIALS

2.01 Storm Water Management Plan

- A. Preparation Standards: Design of the SWMP and the Storm Water Quality and Erosion Control Plan shall include the following elements:
  - 1. Protection for adjacent properties (including public right-of-way) from erosion and/or sediment deposition.
  - 2. Protection for public streets from the deposit of sediment from run-off or vehicles tracking mud at construction access routes.
  - 3. Stabilization for all disturbed areas as defined in the UDFCD Drainage Criteria Manual.

4. Protection for all storm sewer inlets from the entry of sediment-laden water.
5. Long-term stability of cut and fill slopes and the successful establishment of permanent vegetative cover on exposed soil.
6. The following standard notes:
  - a. "All temporary erosion control facilities shall be installed before any construction activities take place".
  - b. "Solid waste, industrial waste, yard waste and any other pollutants or waste on any construction site shall be controlled through the use of BMP's. Waste and/or recycling containers shall be provided and maintained by the owner or contractor on construction sites where there is the potential for release of waste. Uncontained waster that may blow, wash or otherwise be released from the site is prohibited. Sanitary waste facilitates shall be provided and maintained by the owner or contractor".
  - c. "Ready-mixed concrete, or any materials resulting from the cleaning of vehicles or equipment containing or used in transporting or applying it, shall be contained on construction sites for proper disposal. Release of these materials is prohibited".
  - d. "Cover shall be applied within 14 days to inactive soil stockpiles, and shall be maintained for stockpiles that are proposed to remain in place longer than 30 calendar days".
  - e. "BMP's shall be implemented to prevent the release of sediment from construction sites. Vehicle tracking of mud shall not be allowed to enter the MS4 or waters of the State. Sediment tracked onto public streets shall be removed immediately".
  - f. "Techniques shall be used to prevent dust, sediment or debris blowing from the site".
  - g. "Stormwater discharges from construction activities shall not cause or threaten to cause pollution, contamination or degradation of waters of the State".
  - h. "All earth disturbances shall be designed, constructed and completed to limit the exposed area of any disturbed land to the shortest possible period of time".
  - i. "Bulk storage structures for petroleum products and other chemicals shall have adequate protection so as to contain all spills and prevent any spilled material from entering the MS4 or waters of the State".
  - j. Any disturbance to temporary and permanent BMP's resulting from construction activity shall be repaired or replaced within 48 hours.

### PART 3 – EXECUTION

#### 3.1 PERMITTING

- A. Contractor shall develop the SWMP in accordance with all of the requirements herein and utilizing the most recent SWMP guidance document prepared by the CDPHE and good engineering hydrologic and pollution control practices and submit to the University for approval.
- B. Contractor shall apply for and obtain a CDPHE storm water general permit for construction activities. Provide copies of the permit to the University prior to the start of construction operations.

### 3.2 CONSTRUCTION

- A. The Contractor will be required to have the SWMP on site at all times and shall be prepared to respond to maintenance of specific BMP's.
- B. The Contractor shall inspect all BMP's at least every 14 days and within 24 hours after any precipitation or snow melt event that causes surface run-off. Inspections of BMP's shall be conducted by an individual who has successfully completed formal training in erosion and sediment control by an organization acceptable to the University. A certification of successful completion of such training shall be provided upon request.
- C. The Contractor shall amend the SWMP whenever there is a change in design, construction, operation, or maintenance, which has an effect on the potential for discharge of pollutants to the MS4 or receiving waters, or if the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in stormwater discharges associated with construction activities.
- D. Records of inspection are to be maintained on site with the SWMP. Inspection records are to be available at the project site at all times and shall be made available to the University upon request.
- E. Prior to commencement of work, all general contractors, subcontractors and utility agencies shall obtain and comply with the approved, current SWMP for the project.

### 3.3 POST CONSTRUCTION

At the conclusion of all construction activities and as a part of construction close-out, contractor shall remove all temporary BMP's and inactivate the stormwater permit.

END OF SECTION