SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

General description of the work of the entire Project with any limitations or coordination with other contracts, if any.

1.2 GENERAL

REFER TO GENERAL CONDITIONS AND SPECIAL SUPPLEMENTARY GENERAL CONDITIONS

Salvage materials not scheduled for reuse shall be stored or disposed of as instructed by the University of Colorado Denver Project Manager. Upon completion of each phase of the work and at such times as directed, remove all surplus materials, debris, equipment, and implements from the site and leave the site in a clean, neat condition.

1.3 PROJECT DESCRIPTION

Briefly and without force and effect upon the contract documents, the Work of the Contract can be summarized as follows:

- Project Identification: [
- Approximate Gross Floor Area: [
- Stories: [
- Occupancy: [
- Construction Type: [
- Structure: [
- Partitions: [
- Laboratory: [
- Mechanical Systems: [
- Electrical Systems: [

1.4 SPECIAL REQUIREMENTS

Mandatory Sequences:

The Owner may continue to occupy a site where construction of a new addition or remodel occurs. The Contractor will review the sequencing of work and tailor its construction activities to accommodate the tenant occupation.

Owner Furnished and Installed Equipment:

The Owner will furnish certain items of equipment/furnishings as shown on the drawings. Contractor will be responsible for coordinating their work to accommodate these items including, but not limited to, physical space fit, utility connections and rough-in, power wiring and electrical characteristics.
Contractor will include in their scheduling the latest times when information for such items is required and so notify the Owner in writing.

Owner Furnished, Contractor Installed Equipment:

The Owner will furnish certain items delivered to the jobsite as shown on the drawings. Contractor will receive, unload, move, set in position, anchor and connect such items and put them into operating condition.

The Contractor will be responsible for coordinating their work to accommodate these items including, but not limited to, physical space fit, utility connections and rough-in, power wiring and electrical characteristics.

The Contractor will include in their scheduling the latest times when information for such items is required and so notify the Owner in writing.

The Contractor will cooperate with Owner in scheduling the delivery of these items and be responsible for accommodating their storage and protection in the building and their replacement or repair due to damage as a result of their operations.

1.5 OCCUPANCY

Occupancy by Owner:

During the Contractor's performance of the work of this Contract, the Owner may continue to occupy areas of the existing building on a full time basis.

The Contractor shall not interrupt the building access and facilities.

The Contractor shall maintain means of egress for fire exits from existing buildings and all adjacent buildings.

The Contractor shall limit construction operations to those methods and procedures which will not adversely and unduly affect the working environment of Owner's occupied spaces, including noise, dust, odors, air pollution, ambient discomfort, poor lighting, hazards and other undesirable effects and conditions.

The Contractor shall coordinate with the Owner’s Project Manager to schedule jack hammering or activities producing dusty conditions, excessive fumes or odors during off-hours.

The Contractor shall notify the Owner’s Project Manager 72 hours in advance of construction activities, which will impact the occupancy, and use of adjacent areas. The Owner’s Project Manager will coordinate with campus tenants.

Interruptions of oxygen, power, lighting, plumbing, telephone and HVAC services and other utilities require prior notice to and approval by the Owner. Interruptions must be scheduled in advance and coordinated through the Owner’s Project Manager. Advanced notices for the type of interruption are as follows:

| Isolated Service: (floor, wing or individual rooms) | [7 working days] |
| Building Service: (major functions or mission impact: an outage that affects one or more systems intrinsic to the operations of a building or facility) | [30 calendar days] |

Contractor will follow section 1352 Indoor Air Quality during construction in these areas.

Existing Elevators:
Existing elevators located in building near new construction area must be maintained for use by the Owner at all times. Do not block aisles, passageways, or doors leading to elevator except as may be approved by Owner and Architect.

Construction Access and Travel:

Contractor, subcontractors and all construction personnel will be required to use entrances, exits, and travel ways on campus roads and within the building as designated by the Owner. Contractor's work force will not be permitted in non-designated areas of Owner's existing facilities. All demolition materials and new construction materials, tools and equipment must follow the designated travel ways.

To use other than designated travel ways on campus roads within existing buildings will require approval of Owner at least 20 days prior or use. Variations to the Traffic Flow, Regulatory Signage, and Traffic Control Devices are to be requested in accordance with the UC Denver “Procedure for Approval of ‘Regulatory Signage, Traffic Control Devices and for Street Closures’ at the Anschutz Medical Campus or City of Denver requirements for Downtown Campus”. A copy of this procedure can be obtained through the UC Denver Project Manager. Access to the building and staging areas for the Contractor's operations will be covered in the pre-bid conference and further detailed during the pre-construction meeting.

Contractor access to the site will be as permitted by the Owner. Delivery and use of cranes, heavy trucks and other heavy equipment must be prearranged by more than 72 hours through the Owner’s Project Manager and University Police (UP).

Access to fire lanes and campus operations must be maintained by the Contractor at all times. Contractor will provide flag personnel during the ingress or egress of large equipment. If access way is to be temporarily disrupted, UP and Parking and Transportation (PT) must be notified at least 20 working days in advance and reconfirmation 72 hours in advance. Road closures are to be requested on accordance with the UC Denver “Procedure for Approval of ‘Regulatory Signage, Traffic Control Devices and for Street Closures’ at the Anschutz Medical Campus”.

Disruption of City of Aurora streets must be separately permitted by the City, coordinated by the Anschutz Medical Campus Liaison through the Owner’s Project Manager.

Construction Parking and Staging Areas:

Work for this project must be performed within the limitations of available space and access to the site. Contractor shall adjust the means and methods of construction to allow for restrictions of the site. Contractor will locate staging area where permitted by Owner. Damaged lawns, sprinkler systems and sidewalks within the staging area and access ways will require replacement as part of the work for this project.

All parking on UC Denver property on the Anschutz Medical Campus is under the exclusive control and authority of Parking and Transportation Services. There is no free parking on campus. Displacement or use of existing parking spaces by the Contractor will be a Contractor cost. Any use of existing parking spaces or other areas outside of Contractor’s staging area must be approved in advance by Parking and Transportation Services. Parking within Contractor’s staging area is permitted depending on space availability. Depending on the assigned area, Parking and Transportation Services may require and issue parking permits through the Owner’s Project Manager. Permits must be displayed and visible at all times while parked on the campus. Failure to display the permit will result in citations being written and possible removal of the vehicle from UC Denver property. UC Denver parking rules and regulations apply to all areas under control of Parking and Transportation Services, including UC Denver owned streets. The Contractor will be responsible for all subcontractors adhering to the parking rules and regulations.
Contractor will be responsible for keeping any designated parking areas clean and free of litter and debris. Parking and Transportation Services and the Grounds Department reserve the right to have the Contractor clean any designated parking areas that are not kept neat and orderly. Existing parking spaces used for staging will be returned to their pre-project condition to include pavement repairs, markings and signage.

Parking and Transportation Services reserves the right to change parking assignments as deemed necessary, to restrict the use of any space(s) or lot(s) at any time, and to determine the hours of control and mode of operations for any parking area at any time. Parking and Transportation Services may deny or revoke parking privileges to any person when deemed necessary and/or considered to be in the best interests of the University.

The University of Colorado Denver and any entity it is affiliated with are not responsible for fire, theft, damage or loss of a Contractor or subcontractor’s vehicle or any article left therein. Only license is granted to the user and no bailment is created.

Questions about these policies can be directed to the Parking and Transportation Services Division, at 303-724-2555.

Protection of Personnel and Facilities:

Provide temporary barriers or partitions as required to protect occupants of the existing building and general public from injury due to work of this project, and to protect adjacent areas of the building from spread of dust or dirt.

Refer to Section 01500 for construction of temporary barriers or partitions and refer to 1352 Indoor Air Quality.

Existing Furniture and Equipment:

The Owner will remove or relocate existing movable furniture and equipment from areas in which the Contractor is working. The Contractor will notify the Owner Project Manager not less than three working days prior to starting of work in areas where furniture and equipment requires removal.

Coordination:

Concurrently with the work of this Contract, other contractors, suppliers or Owner's Fac. Ops. personnel may be working in relatively close proximity. Contractor will be responsible for coordinating their work with that of other personnel and make no claim for failure to do so.

Normal Working Hours:

Normal work hours are defined as 7:00 a.m. – 7:00 p.m., five days a week, Monday through Friday.

Noise Outside Normal Hours:

Construction work or demolition work outside of normal hours shall be scheduled 72 hours in advance with the Owner’s Project Manager. Work Outside Normal Hours shall be subject to a maximum permissible sound level of 75 decibels (dBA), measured at the adjacent property line.

PART 2 - PRODUCTS

(Not applicable)

PART 3 - EXECUTION
SECTION 01020

ALLOWANCES

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Administrative and procedural requirements governing handling and processing allowances.

Selected materials and equipment, and in some cases, their installation are shown and specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. Additional requirements, if necessary, will be issued by Change Order.

Types of allowances required include the following:

- Lump sum allowances.
- Unit cost allowances.
- Contingency allowance.
- Inspection and testing allowance.

Procedures for submitting and handling Change Orders are included in Section 01028.

Use of allowances for inspection and testing agencies is included in Section "Quality Control Services".

1.2 ALLOWANCE REQUIREMENTS

The terms and conditions for allowances are set forth in the General Conditions and apply to the allowances described in this Section except as otherwise specified herein.

Designate in the Construction Progress Schedule the delivery dates for products specified under each allowance.

Designate in the Schedule of Values the quantities of materials required under each unit cost allowance.

The amount of each allowance includes:

- The cost of the product to the Contractor or Subcontractor, less any applicable trade discounts.
- Delivery to the site.
Labor required under the allowance, only when labor is specified to be included in the allowance.

Applicable taxes.

In addition to the amount of each allowance, include in the Contract Sum the Contractor's cost for:

Handling at the site; including unloading, uncrating and storage.

Protection from the elements and from damage.

Labor for installation and finishing, except where labor is specified to be a part of the allowance.

Other expenses required to complete the installation.

Contractor's and Subcontractor's overhead and profit.

1.3 ALLOWANCE PROCEDURES

Selection and Purchase:

At the earliest feasible date after the Award of Contract, advise the Architect of the scheduled date when the final selection and purchase of each product or system described by each allowance must be accomplished in order to avoid delays in the performance of the work.

When requested by the Architect, obtain proposals for each allowance for use in making final selections; include recommendations that are relevant to performance of the work.

Purchase products and systems as selected by the Architect from the designated supplier.

1.4 SUBMITTALS

Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

Submit invoices or delivery slips to indicate actual quantities of materials delivered to the site for use in fulfillment of each allowance.

1.5 INSPECTION AND TESTING ALLOWANCES

Inspection and testing allowances include the cost of engaging the inspection or testing agencies and costs for reporting the results as well as costs for the actual inspections and tests.

The allowance does not include incidental labor required to assist the testing agency, or costs for retesting upon failure of previous tests and inspections. The allowance also does not include costs of services not required by the Contract Documents.

At project closeout, credit unused amounts remaining in the inspection and testing allowance to Owner by Change Order.

1.6 UNUSED MATERIALS

Return unused materials to the manufacturer or supplier for credit to the Owner, after installation has been completed and accepted.
Where it is not economically feasible to return unused material for credit and when requested by the Architect, prepare unused material for the Owner's storage, and deliver to the Owner's storage space as directed. Otherwise, disposal of excess material is the Contractor's responsibility.

1.7 ADJUSTMENT OF COSTS

Should the net cost be more or less than the specified amount of the allowance, the Contract Sum will be adjusted accordingly by Change Order.

The amount of each Change Order resulting from final selection of products and systems covered by an allowance shall be the difference between purchase order amount and allowance, and shall not include Contractor's mark-up (or Subcontractor's mark-up) except to the extent clearly demonstrated by Contractor that either scope of installation or nature of work required was changed from that which could have been foreseen from description of allowance and other information in contract documents. No mark-up is permitted for selection of higher or lower priced materials or systems, of same scope and nature as originally indicated.

For unit cost type allowance, calculate the amounts on the difference between the unit purchase amount and the unit allowance, multiplied by the final measure or count of work-in-place; with reasonable allowances, where applicable, for cutting losses, tolerances, mixing wastes, normal product imperfections and similar margins.

When requested, prepare explanations and documentation to substantiate margins as claimed.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.1 INSPECTION

Inspect products covered by an allowance promptly upon delivery for damage or defects.

3.2 PREPARATION

Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related construction activities.

3.3 SCHEDULE OF ALLOWANCES

Lump Sum for Products:

Section [:] Allow the lump sum of $[ ] for the purchase of [].
Section [:] Allow the lump sum of $[ ] for the purchase of [].
Section [:] Allow the lump sum of $[ ] for the purchase of [].

Lump Sum for Products and Installation:

Section [:] Allow the lump sum of $[ ] for the purchase and installation of [].
Section [:] Allow the lump sum of $[ ] for the purchase and installation of [].
Section [:] Allow the lump sum of $[ ] for the purchase and installation of []. 
Unit Cost for Products:

Section [ ]: Allow the sum of $[] per [] for the purchase of [].
Section [ ]: Allow the sum of $[] per [] for the purchase of [].
Section [ ]: Allow the sum of $[] per [] for the purchase of [].

Unit Cost for Products and Installation:

Section [ ]: Allow the sum of $[] per [] for the purchase and installation of [].
Section [ ]: Allow the sum of $[] per [] for the purchase and installation of [].
Section [ ]: Allow the sum of $[] per [] for the purchase and installation of [].

END OF SECTION
SECTION 01026

UNIT PRICES

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Requirements and descriptions for those items for which indefinite quantities can be expected and, therefore, pre-agreed prices per unit of work are established as a means to determine adjustments to the Contract Price after actual quantities are determined.

Unit prices include all necessary labor, materials, equipment, overhead, profit and applicable taxes.

Related Sections:

Refer to Section 01020 allowances, either lump sum or unit cost.

Refer to the Drawings and individual specification sections for the work requirements for each unit cost.

1.2 QUANTITIES AND COST ADJUSTMENTS

As soon as the work involved in each unit cost item has been completed, submit documentation to establish the actual quantities provided. Submit to the Architect for review and issuance of Change Order.

Change Order amount for each unit cost item will be based on actual quantities multiplied by the unit cost. This unit cost includes all mark-ups, overhead and profit.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.0 SCHEDULE OF UNIT PRICE ITEMS

END OF SECTION
SECTION 01028

CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Procedures for processing Change Orders.

Refer to General Conditions or Contract for definitions and contractual requirements related to change orders.

Related Sections:

Section 01720 Contract Closeout Procedures
Section 01701 Project Record Documents

1.2 SUBMITTALS

Submit the name of individual authorized to accept changes, and to be responsible for informing others in the Contractor's employ of changes in the work.

Change Order Bulletin: Submit on State form provided by the Owner and available on Office of State Architect Website.

Change Order Proposal: State form SC - 6.312 provided by the Owner and available on Office of State Architect Website.

Change Order: State form SC - 6.31 provided by the Owner and available on Office of State Architect Website.

1.3 DOCUMENTATION

Maintain detailed records of the work completed. Provide complete information for evaluation of proposed changes and to substantiate changes in Contract Sum or Contract time.

Provide the following data on a Change Order Proposal to support calculations consistent with contract provisions:

1) Contractor and Subcontractor labor, material and equipment costs.

2) Contractor and Subcontractor overhead and profit.

3) Contractor's bond cost.
4) Justifications for any change in Contract Time.
5) Credit for deletions from the Contract and similar documentation.

1.4 PRELIMINARY PROCEDURES

The Owner through the Architect may submit a Change Order Bulletin, which will include description of change and may also include supplementary or revised drawings and specifications and projected time for execution. The time period for which the request will be valid will also be stated.

The Contractor may make a claim for added costs or extension of time by submitting both a Change Order Bulletin and a Change Order Proposal to the Architect which describes the claim, the reasons for the claim, change in Contract Sum and Contract Time and full documentation. For requested substitutions of products, follow procedures and documentation specified in Section 01630.

1.5 AUTHORIZATION

Claims by Contractor:

Architect will follow procedures set forth in the General Conditions and Contract, which may result in issuance of a Change Order.

Requests for Change Proposal:

After receipt of Contractor's completed Change Order Proposal in response to a Change Order Bulletin, Architect and Owner will evaluate and either request additional information or issue a Change Order.

1.6 PROCESSING

Contractor will complete supporting documentation in the form of a Change Order Proposal in response to a Change Order Bulletin. Contractor will furnish and sign three copies of the Change Order Proposal to the Architect who will review for completeness. After signing all three copies, the Architect will forward to the Owner.

If the Owner agrees with the Change Order Proposal, he will authorize the Architect to prepare and sign three copies of the Change Order. The Architect will forward all three copies to the Contractor for their approval. The Contractor will sign all copies and forward to the Owner for signature and distribution to Architect and Contractor.

1.7 CORRELATION

Promptly revise the Schedule of Values on the Application for Payment Form by indicating each authorized Change Order as a separate line item and adjusting the Contract Sum as shown on the Change Order.

Promptly revise the Progress Schedule to reflect any change in the Contract Time and resubmit.

Promptly enter changes in the Project Record Documents.

PART 2 - PRODUCTS

(Not Applicable)
PART 3 - EXECUTION

(Not Applicable)

END OF SECTION
SECTION 01030
ALTERNATES

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Requirements and descriptions for Alternates as defined herein and as indicated.

1.2 DEFINITIONS

"Alternates" are defined as alternate products, materials, equipment, systems, methods, units of work or major elements of the construction, which may, at the Owner's option and under the terms established by Bidders' Instructions and in the Contract or Agreement, be selected for the work in lieu of the corresponding requirements of the Contract Documents. Selection may occur prior to the Contract Date, or may, by the Agreement, be deferred for possible selection at a subsequent date.

1.3 PROCEDURES

Include as a part of each alternate, miscellaneous devices, appurtenances, differences in utility or power requirements and similar items incidental to or required for a complete installation whether or not mentioned as part of the alternate.

Immediately following award of Contract, prepare and distribute to each party involved notification of the status of each alternate. Indicate whether alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to alternates, if any.

1.4 LIMITATIONS

The description herein of each alternate is recognized to be incomplete and abbreviated, but requires that each change must be complete for the scope of work affected. Refer to the applicable specification sections (Divisions 2 through 16), and to applicable drawings, for the specific requirements of the work. Coordinate related work and modify surrounding work as required to properly integrate with the work of each alternate.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.0 SCHEDULE OF ALTERNATES

Alternate No. 1:
Base Bid:
Alternate:

END OF SECTION
SECTION 01040
COORDINATION

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Requirements for coordination, supervision and administration for Project, including but not necessarily limited to:

Coordination
Administrative and supervisory personnel
General installation provisions
Cleaning and protection.

Related Sections:

Section 01010 - Summary of Work.
Section 01105 - Administration, Procedures and Codes.
Section 01200 - Project meetings.

1.2 SUBMITTALS

Coordination Drawings:

For locations where several elements of equipment, mechanical or combined mechanical and electrical, work must be sequenced and positioned with precision in order to fit into the available space. Prepare coordination shop drawings showing the actual physical dimensions at accurate scale required for the installation, and submit coordination drawings prior to purchase/fabrication/installation of any of the elements involved in the coordination.

Lay out the mechanical and electrical work in conformity with the Contract Drawings, coordination drawings and other shop drawings, product data and similar requirements, so that the entire mechanical plant will perform as an integrated system properly interfaced with electrical work and other work.

Staff Names:

Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; their addresses and telephone numbers, including after-hours telephone numbers for emergency response.
Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

1.3 GENERAL COORDINATION

General:

Each entity involved in the performance of work for the entire Project shall cooperate in the overall coordination of the work; promptly, when requested, furnish information concerning its portion of the work; and respond promptly and reasonably to the decisions and requests of persons designated with coordination, supervisory, administrative, or similar authority.

Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

Prepare similar memoranda for the Owner and separate Contractors where coordination of their work is required.

Administrative Procedures:

Coordinate scheduling and timing of required administrative procedures with other construction work. Such administrative activities include, but are not limited to, the following:

- Preparation of schedules;
- Installation and removal of temporary facilities;
- Delivery and processing of submittals;
- Progress meetings;
- Project closeout activities.

Conservation and support of LEED, Sustainable Buildings:

Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water and materials. Contractor should establish a recycling program at the job site.

Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work. Refer to other sections for disposition of salvaged materials that are designated as Owner's property.

Site Utilization:

In addition to the site utilization limitations and requirements indicated in Section 01010 and indicated by the Contract Documents, administer the allocation of available space equitably among entities needing access and space, so as to produce the best overall efficiency in the performance of the total work of the project. Schedule deliveries so as to minimize the space and time requirements for storage of materials and equipment on the site; but do not unduly risk delays in the work.

The Contractor shall note that concurrent with their work, other contractors, suppliers, and the Owner's Fac. Ops. personnel may be working in relatively close proximity. The Contractor will be
solely responsible for coordinating their work with that of other contractors and will make no claims for failure to do so.

Coordination Meetings:

Include in scheduled meetings, coordination of various entities and activities as set forth in Section 01200. Where necessary, schedule additional coordination meetings for this purpose on an as-needed basis.

Layout:

It is recognized that the Contract Documents are diagrammatic in showing certain physical relationships of the various elements and systems and their interfacing with other elements and systems. Establishment and coordination of these relationships is the exclusive responsibility of the Contractor. Do not scale the drawings. Lay out and arrange all elements to contribute to safety, efficiency and to carry the harmony of design throughout the Work. In case of conflict or undimensioned locations, verify required positioning with Architect.

Substrate Examination:

The Installer of each element of the work must examine the conditions of the substrate to receive the work, dimensions and spaces adjacent, tolerances, interfacing with other elements and services, and the conditions under which the work will be performed, and must notify the Contractor in writing of conditions detrimental to the proper or timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

Large and Heavy Equipment:

Contractor to coordinate with Owner’s Project Manager of the requirements to be maintained for the subsequent entry of large equipment units. Coordinate the movement of heavy items with shoring and bracing, so that the building structure will not be overloaded during the movement and installation.

Where equipment or products to be installed on the roof are too heavy to be hand-carried, do not transport across roof deck; position by crane or other device so as to avoid overloading the roof deck.

1.4 COMPLETE SYSTEMS

It is the intent of the Contract Documents that all systems, including mechanical and electrical, be complete and functional to provide the intended or specified performance. The Contractor shall provide all incidental items and parts necessary to achieve this requirement.

Provide correctly sized power, utilities, piping, drains, services and their connections to equipment and systems requiring them, whether or not specific items are listed in the schedule under heading 1.6, below, in this section.

1.5 MECHANICAL/ELECTRICAL/EQUIPMENT COORDINATION

General:
Sequence, coordinate and integrate the various elements of equipment, mechanical work and electrical work so that various systems and mechanical plant will perform as indicated and be in harmony with other work of the building. Neither the Architect or their engineering consultants will supervise the coordination, which is the exclusive responsibility of the Contractor.

Comply with the following requirements:

Install piping, ductwork and similar services straight and true, aligned with other work, close to walls and overhead structure, allowing for insulation, concealed (except where indicated as exposed) in occupied spaces, and out-of-the-way with maximum passageway and headroom remaining in each space.

Install electrical work in a neat, organized manner with conduit and similar services in or parallel with building lines, and concealed unless indicated as exposed.

For all work maintain maximum practical overhead clearance but not less than 6" above ceiling. Where exposed, maintain 7'-0" minimum clearance.

Arrange all work to facilitate maintenance and repair or replacement of equipment. Locate services requiring maintenance on valves and similar units in front of services requiring less maintenance. Connect equipment for ease of disconnecting, with minimum of interference with other work.

Provide space to permit removal of coils, tubes, fan shafts, filters, other parts which may require replacement.

Locate operating and control equipment and devices for easy access. Furnish access panels where units are concealed by finishes and similar work.

Integrate mechanical work in ceiling plenums with suspension system, light fixtures and other work, so that required performances of each will be achieved.

Give the right-of-way to piping systems required to slope for drainage over other service lines and ductwork.

Advise other trades of openings required in their work for accommodation of mechanical and electrical elements. Provide and place sleeves and anchors required in other work.

Access Panels:

Access panels for concealed valves, controls, dampers, pull boxes and other devices requiring access and located in concealed positions other than above lift-out ceilings will be furnished by Installer of item needing access. Furnish panels as specified. Coordinate locations with other trades and with Architect. Locate exact positions for installation under Divisions 3, 4, and 6 sections and applicable Division 9 sections in other materials.

1.6 COMPATIBILITY

Provide products and equipment which are compatible with other work requiring mechanical/electrical interface including electrical connections, control devices, water, drain and other piping connections. Verify electrical characteristics, fuel requirements and other interface requirements before ordering equipment and resolve conflicts that may arise.
Make connections to controls directly attached to ducts, piping or equipment with flexible connections.

Coordinate equipment, mechanical and electrical work in accordance with the following schedule:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SET IN PLACE</th>
<th>WIRED AND/OR MOUNTED BY</th>
<th>POWER WIRED &amp; CONNECTED BY</th>
<th>CONTROL CONNECTED BY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equipment motors</td>
<td>I</td>
<td>MI</td>
<td>EI</td>
<td>--</td>
</tr>
<tr>
<td>Motor starters, contactors and overload heaters</td>
<td>MI</td>
<td>EI</td>
<td>EI</td>
<td>MI</td>
</tr>
<tr>
<td>Fused and unfused disconnect switches</td>
<td>EI**</td>
<td>EI**</td>
<td>EI</td>
<td>--</td>
</tr>
<tr>
<td>Manual operating switches, speed switches, push-button stations and pilot lights</td>
<td>MI</td>
<td>EI</td>
<td>EI</td>
<td>EI</td>
</tr>
<tr>
<td>Duct detectors</td>
<td>EI</td>
<td>MI</td>
<td>EI</td>
<td>MI</td>
</tr>
<tr>
<td>Control relays and transformers</td>
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<td>MI</td>
<td>EI</td>
<td>MI</td>
</tr>
<tr>
<td>Thermostats, time switches*</td>
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<td>MI</td>
<td>EI</td>
<td>MI</td>
</tr>
<tr>
<td>Temperature control panels</td>
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<td>MI</td>
<td>EI</td>
<td>MI</td>
</tr>
<tr>
<td>Motor and solenoid valves, damper motors, PE and EP switches</td>
<td>MI</td>
<td>MI</td>
<td>--</td>
<td>MI</td>
</tr>
<tr>
<td>Refrigeration equipment, cooling tower and controls</td>
<td>MI</td>
<td>MI</td>
<td>EI</td>
<td>MI</td>
</tr>
</tbody>
</table>

I = Installer of equipment requiring electrical service
EI = Electrical Installer
MI = Mechanical Installer

* Motor driven units which are controlled from line voltage automatic controls such as line voltage thermostats, float switches or time switches which conduct full load current of the motor shall be wired for both power and control circuit under the electrical contract. However, if the control device does not conduct full load current, then the responsibility shall be that set forth in the above schedule. (Example: a 208 volt, 3-phase, 3-wire motor requires 120 volt control. Electrical Installer shall furnish a 120 volt circuit for control and 208 volt circuit for power and wire the power circuit. Mechanical Installer shall wire the control circuit.)

** Disconnects for AH units are factory mounted.

PART 2 - PRODUCTS

(Not Applicable)
PART 3 - EXECUTION

3.0 GENERAL INSTALLATION PROCEDURES

Inspection of Conditions:

Require the Installer of each major component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

Recheck measurements and dimensions, before starting each installation.

Manufacturer's Instructions:

Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

Installation:

Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion and building movement.

Install each component during weather conditions and project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

Visual Effects:

Provide uniform joint widths in exposed work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

Mounting Heights:

Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

3.1 CLEANING AND PROTECTION

During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at substantial completion.
Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

Limiting Exposures:

Supervise construction activities to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

- Excessive static or dynamic loading
- Excessive internal or external pressures
- Excessively high or low temperatures
- Thermal shock
- Excessively high or low humidity
- Air contamination or pollution
- Water or ice
- Solvents
- Chemicals
- Light
- Radiation
- Puncture
- Abrasion
- Heavy traffic
- Soiling, staining and corrosion
- Bacteria
- Rodent and insect infestation
- Combustion
- Electrical current
- High speed operation
- Improper lubrication
- Unusual wear or other misuse
- Contact between incompatible materials
- Misalignment
- Excessive weathering
- Unprotected storage
- Improper shipping or handling
- Theft
- Vandalism.

END OF SECTION
SECTION 01045
CUTTING AND PATCHING

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Descriptive requirements for cutting and patching which includes, but is not limited to: concrete, asphalt, curbs, gutters, sidewalks, walls, ceilings, floors, and roofs.

1.2 DEFINITION

"Cutting and patching" is hereby defined to include, but not necessarily limited to, the cutting and patching of nominally completed and previously existing work, in order to accommodate the listed requirements; and is defined to exclude integral cutting and patching during the manufacturing, fabricating, erecting and installing process for individual units of work. Drilling the work to install fasteners and similar operations are excluded from the definition of cutting and patching.

Demolition is recognized as an example of a related-but-separate category of work, which may or may not also require cutting and patching as defined in this section; refer to Demolition Section.

1.3 RESPONSIBILITIES

Contractor shall be responsible for all cutting, fitting and patching, including attendant excavation and backfill, required to complete the Work or to:

- Make its components fit together properly.
- Uncover portions of the Work to provide for installation of ill-timed work.
- Remove and replace defective work or work not conforming to requirements of Contract Documents.
- Remove samples of installed work as specified for testing.
- Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

Refer to other sections for specific cutting and patching requirements and limitations applicable to individual units of work.

1.4 SUBMITTALS

Proposals for Cutting and Patching:
Submit a written request to Architect well in advance of executing any cutting or alteration, which affects:

- Work of the Owner or any separate contractor.
- Structural value or integrity of any element of the Project.
- Integrity or effectiveness of weather-exposed or moisture-resistant elements or systems.
- Efficiency, operational life, maintenance or safety of operational elements.
- Visual qualities of sight-exposed elements.
- Cutting new openings in existing structural concrete walls, floors and suspended slabs.
- Cutting new openings in existing roofs and roofing materials.
- Cutting exterior walls.
- Cutting into shafts.

Include description of why cutting and patching cannot reasonably be avoided, how it will be performed, how structural elements will be reinforced, products to be used, firms and trades to perform the work, approximate dates of the work, and anticipated results in terms of variations from the work as originally completed (structural, operational, visual and other qualities of significance).

List utilities that will be disturbed or otherwise affected by work, including those that will be relocated and those that will be out-of-service temporarily. Indicate how long utility service will be disrupted.

Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.

Approval by Architect to proceed with proposed cutting and patching does not waive their right to later require complete removal and replacement of work found to be unsatisfactorily cut-and-patched.

1.5 QUALITY ASSURANCE

Requirements for Structural Work:

- Do not cut and patch structural work in a manner resulting in a reduction of load-carrying capacity or load/deflection ratio.

Operational and Safety Limitations:

- Do not cut and patch operational elements and safety-related components in a manner resulting in a reduction of capacities to perform in the manner intended or resulting in decreased operational life, increased maintenance, or decreased safety.

Visual Requirements:
Do not cut-and-patch work which is exposed on the exterior or exposed in occupied spaces of the building, in a manner resulting in a reduction of visual qualities or resulting in substantial evidence of the cut and patch work, both as judged solely by the Architect. Remove and replace work judged by the Architect to be cut-and-patched unsatisfactorily, visually.

1.6 PROJECT CONDITIONS

Where cutting and patching of existing construction is required, prior to start of work, inform Owner’s Project Manager of existing construction to be disturbed. Owner will determine if existing construction contains asbestos. Do not proceed with work until Owner has made an examination. Refer to Section 01105.

PART 2 - PRODUCTS

2.0 MATERIALS

Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.0 EXAMINATION

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

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

Report unsatisfactory or questionable conditions to Architect in writing; do not proceed with work until Architect has provided further instructions.

3.1 PREPARATION

Temporary Support:

Provide adequate support for work to be cut, to prevent failure. Do not endanger other work.

Protection:

Provide adequate protection of other work during cutting and patching, to prevent damage; and provide protection of the work from adverse weather exposure.

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

Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, that are scheduled to be removed or relocated until provisions have been made to bypass them.

3.2 CUTTING AND PATCHING
General:

Employ experienced workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

Cutting:

Cut work by methods least likely to damage work to be retained and work adjoining. Review proposed procedure with original Installer where possible, and comply with their recommendations.

Cut holes and slots neatly to size required and temporarily cover openings when not in use.

In general, cut work with sawing and grinding tools, not with hammering and chopping tools. Core drill openings through concrete work.

To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.

Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

Comply with the requirements of applicable sections of Division 2 where cutting requires excavating and backfilling.

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

Patching:

Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

Restore exposed finishes of patched areas; and, where necessary, extend finish restoration onto retained work adjoining, in a manner which will eliminate evidence of patching.

Where a patch occurs in a smooth painted surface, extend final paint coat over the entire unbroken surface containing the patch.

Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

Patch, repair or re-hang existing ceilings as necessary to provide an even plane surface of uniform appearance.

END OF SECTION
SECTION 01078

DEFINITIONS AND EXPLANATIONS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Definitions of certain terms used in the specifications, and explanations of the language, abbreviations thereof, format and certain conventions used in the specifications and associated Contract Documents.

Limitations of Scope:

The definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work to the extent such definitions or explanations are not stated more explicitly in other provisions of the Contract Documents.

1.2 DEFINITIONS

Where the term “Contractor” or “Subcontractor” is used, it should be understood to mean those bidding to these bid documents.

Where the term “General Conditions” are used, it should be understood to mean the contract terms as contained in the [ ] Agreement.

Where these specifications imply an interface or exchange of information between “Subcontractor” and “Project Manager,” “Owner,” or “Owner’s Project Manager,” it should be understood that this activity should be routed through the Contractor’s Project Manager.

Where the term “Engineer,” and/or “Architect” or “Architect/Engineer” is used, it should be understood to mean the designer of record.

Project Manual: The term "Project Manual" refers to a bound, printed volume or volumes, which includes conditions of the Contract and the Specifications. It may also include bidding requirements, contract forms, details, schedules, surveys, reports or other relevant items which may or may not be Contract Documents.

General Requirements: Provisions and requirements of other Division 1 sections apply to the entire work of the Contract and, where so indicated, to other elements of work which are included in the Project.

Indicated: The term "indicated" is a cross reference to graphic representations, notes or schedules on the drawings, to other paragraphs or schedules, and to similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "scheduled" and "specified" are used in lieu of "indicated", it is for the purpose of helping the reader accomplish the cross reference, and no limitation is intended except as specifically noted.
Directed, Requested, etc.: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by the Architect", "requested by the Architect", etc. However, no such implied meaning will be interpreted to extend the Architect's responsibility into the Contractor's area of construction supervision.

Installer: The entity (person, company or firm) engaged by the Contractor or their Subcontractor or Sub-subcontractor for the performance of a particular element of construction at the project site, including installation, erection, application and similar required operations. It is a general requirement that Installers be expert in the operations they are engaged to perform.

The term "experienced", when used with the term "Installer" means having completed a minimum of 5 successful previous projects similar in size and scope to this Project and means the Installer is familiar with the precautions required and has complied with requirements of the authorities having jurisdiction.

Where these specifications require Installer experience or other qualifications, such requirements apply to the company and not to its employees or individual members. Where company ownership has changed after the required experience occurred, Architect and Owner reserve the right to consider the ownership change as invalidating the experience requirements.

Project Site: The space available to the Contractor for the performance of the Work, either exclusively or in conjunction with others performing other work as part of the project. The extent of the project site is shown on the drawings, and may or may not be identical with the description of the land upon which the project is to be built.

Testing Laboratory or Agency: An independent entity engaged to perform specific inspections or tests of the work, either at the project site or elsewhere; and to report and (if required) interpret the results of those inspections or tests.

Approval: Where used in conjunction with the Architect's action on the Contractor's submittals, applications and requests, is limited to the Architect's responsibilities and duties as specified in the General and Supplementary Conditions. Such approval shall not release the Contractor from responsibility to fulfill requirements of the Contract Documents, unless otherwise provided in the Contract Documents.

Regulations: The term "Regulations" includes laws, statutes, ordinances and lawful orders issued by authorities having jurisdiction, as well as rules, conventions and agreements within the construction industry that control performance of the Work, whether they are lawfully imposed by authorities having jurisdiction or not.

Contractor's Option: Where materials, products, systems or methods are specified to be at the Contractor's option, the choice of which material, method, product or system will be solely the Contractor's. There will be no change in Contract Sum or Time because of such choice.

Furnish: The term "furnish" is used to mean, "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations".

Install: The term "install" is used to describe operations at the project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations".

Provide: The term "provide" means "to furnish and install, complete and ready for the intended use".

Guarantee: The narrow definition of the term "warranty" is hereby established as applying to both "warranty" and "guarantee" which terms are used interchangeably.
1.3 SPECIFICATION EXPLANATIONS

General:

This article is provided to help the user of these specifications to more readily understand the format, language, implied requirements and similar conventions of content. None of these explanations will be interpreted to modify the substance of the requirements.

Specification Format:

These specifications are organized and based on the CSI 16-Division format, including subdivision of the Divisions into sections generally conforming to CSI "Master format" for section titles and numbers.

Imperative Language:

Imperative language is used generally in the specifications. Requirements expressed imperatively are to be performed by the Contractor. At certain locations in the text, for clarity, contrasting subjective language is used to describe the responsibilities which must be fulfilled either indirectly by the Contractor or, when so noted, by others.

Specification Content Conventions:

Overlapping Requirements: Where compliance with two or more industry standards or sets of requirements is specified, and overlapping of those requirements also establishes different or conflicting minimums or levels of quality, the more stringent requirement will be enforced unless the Contract Documents specifically indicate otherwise.

Refer apparently equal but different requirements and uncertainties as to which level of quality is required to the Architect for decision before proceeding.

In certain circumstances, language used in specifications and other Contract Documents is of the abbreviated type. Implied words and meanings will be appropriately interpreted by the Architect. Singular words will be interpreted as plural, and plural words will be interpreted as singular where applicable and where the full context of the Contract Documents so indicates.

Specialists: In certain circumstances the specification requires or implies that specific elements of the Work be assigned to specialists or expert entities who must be engaged to perform that element of the work. Such assignments are special requirements over which the Contractor has no choice or option. They are intended to establish which party or entity involved in a specific element of the Work is considered as being sufficiently experienced in the indicated construction processes or operations to be recognized as "expert" in those processes or operations. Nevertheless, the ultimate responsibility for fulfilling all contract requirements remains with the Contractor.

These requirements should not be interpreted to conflict with the enforcement of the building codes and similar regulations governing the Work. They are also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

Trades: The use of certain titles such as "carpentry" in the specification is not intended to imply that the work must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter". It also is not intended to imply that the requirements specified apply exclusively to tradepersons of that corresponding generic name.
1.4 DRAWING SYMBOLS

Graphic symbols used on the Drawings are those recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., seventh edition.

Mechanical/Electrical Drawings:

Graphic symbols used on mechanical and electrical Drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, they are supplemented by more specific symbols recommended by technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Architect for clarification before proceeding.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION
SECTION 01090
REFERENCE STANDARDS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

Section 01105 Administration, Procedures, Codes.

1.1 SUMMARY

Section Includes:

General information and listing of reference standards.

1.2 REFERENCE STANDARDS

Applicability of Standards:

Except where Contract Documents include more explicit or stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into Contract Documents. Such standards are made a part of the Contract Documents by reference. Individual Sections indicate which codes and standards the Contractor must keep available at the project site for reference.

Referenced standards take precedence over standards that are not referenced but generally recognized in the construction industry as applicable.

Conflicting Requirements:

Where compliance with two or more standards is specified, and they establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the Contract Documents indicate otherwise. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Architect for a decision before proceeding.

Unreferenced Standards:

Unreferenced standards are not directly applicable to the Work, except as a general requirement of whether the Work complies with recognized construction industry standards.

Publication Dates:

Where compliance with an industry standard is required, comply with standard in effect as of date of Contract Documents.

Updated Standards: At the request of the Architect, Contractor or authority having jurisdiction, shall submit a Change Order proposal where an applicable code or standard has been revised and
reissued after the date of the Contract Documents and before performance of Work affected. The Architect will decide whether to issue a Change Order to proceed with the updated standard.

Copies of Standards:

Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activities. Copies of applicable standards are not bound with the Contract Documents.

Where copies of standards are needed for proper performance of a recognized construction activity, the Contractor shall obtain copies directly from the publication source.

Although copies of standards needed for enforcement of requirements may be part of required submittals, the Architect reserves the right to require the Contractor to submit additional copies as necessary for enforcement of requirements.

1.3 ABBREVIATIONS

Trade Associations, Standards and Abbreviations:

References in the Contract Documents to publications and recommendations, by either acronym, name or abbreviation, include, but are not necessarily limited to, the following trade associations, technical societies, government agencies, recognized authorities and standards:

AA  Aluminum Association
AABC  Associated Air Balance Council
AAMA  American Architectural Manufacturers Association
AATCC  American Association of Textile Chemists & Colorists
ACI  American Concrete Institute
ACIL  American Council of Independent Laboratories
ACPA  American Concrete Pipe Association
ADC  Air Diffusion Council
AGA  American Gas Association
AHA  American Hardboard Association
AHAM  Association of Home Appliance Manufacturers
AIA  American Institute of Architects
A.I.A.  American Insurance Association
AIHA  American Industrial Hygiene Association
AISC  American Institute of Steel Construction
AIISI  American Iron and Steel Institute
AITC  American Institute of Timber Construction
ALI  Associated Laboratories
ALSC  American Lumber Standards Committee
AMCA  Air Movement & Control Association
ANSI  American National Standards Institute
APA  American Plywood Association
A.P.A.  American Parquet Association
ARI  Air Conditioning and Refrigeration Institute
ARMA  Asphalt Roofing Manufacturers’ Association
ASA  Acoustical Society of America
ASC  Adhesive and Sealant Council
ASHRAE  American Society of Heating, Refrigeration & Air conditioning Engineers
ASME  American Society of Mechanical Engineers
ASPE  American Society of Plumbing Engineers
ASSE  American Society of Sanitary Engineering
ASTM  American Society for Testing and Materials
AWI  Architectural Woodwork Institute
AWPA  American Wood Preserver's Association
AWPB  American Wood Preserver's Bureau
AWS  American Welding Society
AWWA  American Water Works Association
BHMA  Builders' Hardware Manufacturers’ Association
BIA  Brick Institute of America
BIFMA  Business & Institutional Furniture Manufacturers’ Association
CAGI  Compressed Air & Gas Institute
CDA  Copper Development Association
CE  Corps of Engineers (U.S. Dept. of the Army)
CFR  Code of Federal Regulations
CGA  Compressed Gas Association
CISCA  Ceiling and Interior Systems Contractors Association
CISPI  Cast Iron Soil Pipe Institute
CLFMI  Chain Link Fence Manufacturers Institute
CPSC  Consumer Products Safety Commission
CRI  The Carpet and Rug Institute
CRSI  Concrete Reinforcing Steel Institute
CS  Commercial Standard (U.S. Dept. of Commerce)
CSI  Construction Specification Institute
CTI  Ceramic Tile Institute
DHI  Door and Hardware Institute
DLPA  Decorative Laminate Products Association
DOC  Department of Commerce
EIA  Electronic Industries Association
EIMA  Exterior Insulation Manufacturers’ Association
EPA  Environmental Protection Agency
ETL  ETL Testing Laboratories, Inc.
FCI  Fluid Controls Institute
FGMA  Flat Glass Marketing Association
FM  Factory Mutual Engineering and Research
FPL  Forest Products Laboratory (U.S. Dept. of Agriculture)
FS  Federal Specification (General Services Admin.)
FTI  Facing Tile Institute
GA  Gypsum Association
HEI  Heat Exchange Institute
HI  Hydronics Institute
HMA  Hardwood Manufacturers’ Association
ICBO  International Conference of Building Officials
ICEA  Insulated Cable Engineer's Association, Inc.
IEC  International Electrotechnical Commission (available from ANSI)
IEEE  Institute of Electrical & Electronic Engineers
IESNA  Illuminating Engineering Society of North America
IGCC  Insulating Glass Certification Council
ILI  Indiana Limestone Institute of America
IMI  International Masonry Institute
IMSA  International Municipal Signal Association
ISA  Instrument Society of America
SWI Steel Window Institute
TCA Tile Council of America, Inc.
TIMA Thermal Insulation Manufacturers’ Association
UBC Uniform Building Code
UL Underwriters' Laboratories, Inc.
USDA United States Department of Agriculture
USGBC United States Green Building Council
USPS United States Postal Service
WCLIB West Coast Lumber Inspection Bureau
WCMA Wall Covering Manufacturers’ Association
WRI Wire Reinforcing Institute
WSC Water Systems Council
WSFI Wood and Synthetic Flooring Institute
WWPA Western Wood Products Association (Grading Rules)
W.W.P.A. Woven Wire Products Association

PART 2 - PRODUCTS

(Not applicable)

PART 3 - EXECUTION

(Not applicable)

END OF SECTION
SECTION 01105
ADMINISTRATION, PROCEDURES AND CODES

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

Section 01090 Reference Standards.

1.1 SUMMARY

Section Includes:

General administrative requirements and procedures and related applicable codes.

The UCD is charged with the responsibility of ensuring that the provisions of the applicable Codes and Standards and guidelines are met on its campus.

1.2 BUILDING DEPARTMENT AUTHORITY

The UC Denver campus has an established Building Authority responsible to review and examine buildings and plan documents, to permit and inspect construction and/or demolition to ensure conformance to codes adopted by the UC Denver and issue certificates of temporary occupancy and occupancy if satisfactory conformance is demonstrated.

The authority is executed by the Campus Building Official (CBO) who has the responsibility to perform all the duties set forth in the Current Approved State Buildings Codes and as provided elsewhere in that code and other applicable Codes and Standards appearing in Paragraph 1.3 Governing Regulations of this Section.

Permits:

No building or structure shall be erected, constructed, enlarged, repaired, moved, removed, converted or demolished unless a separate permit for each project has first been obtained from the Office of the CBO. All permits shall be coordinated and obtained through the Owner’s Project Manager. The Contractor is not responsible for costs associated with construction permits.

Permit Issuance:

The application, drawings, specifications, computations and other data filed by an applicant for permit shall be reviewed by the CBO. The Contractor, working with the Owner’s Project Manager shall complete a permit application. Permits shall require submittal of two (2) stamped, signed sets of construction documents, including drawings, specifications and all addenda. An inspection report card will be issued with the permit. One stamped set of documents will be kept on site by the Contractor and one stamped set will be kept in UC Denver plan room in Campus Support.

Posting of Permit:
The Contractor shall post the Permit in a visible and protected location near the access to the project.

Inspection Report Card:

The Contractor shall post the Inspection Report Card next to the permit in a visible and protected location near the access to the project.

Inspection Request:

It shall be the duty of the Contractor to notify the CBO that such work is ready for inspection. Two working days before such inspection is desired, the Contractor shall call the telephone number posted on the permit to schedule the required inspection. The CBO retains the right to require such request in writing. It shall be the duty of the Contractor requesting inspections required by the Current Approved State Building and UC Denver Codes to provide access to and means for inspection of such work.

A re-inspection fee may be charged for prior rejected items.

Construction Inspections:

The construction documents Current Approved State Building and UC Denver Codes shall include provisions for structural and other special inspection required by. The Contractor is not responsible for costs associated with construction inspections, except re-inspections. The CBO or his/her designee shall perform all general building, electrical and plumbing inspections. All construction or work for which a permit is required shall remain accessible and exposed for inspection purposes.

1.3 APPLICABLE CODES AND STANDARDS

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.

Current applicable codes are on The Office of The State Architect’s website at:
http://www.colorado.gov/dpa/dfp/sbrep/code.htm/

University of Colorado Denver: Codes and Standards that supplement codes on Office of the State Architect Website.


Colorado Rules and Regulations pertaining to Radiation Control, 6 CCR 1007 Part 1-20.


Last edition of "Guide for Care and Use of Laboratory Animals."
UC Denver Campus Standard Biosafety Level (BL3) Construction Standards.

The National Fire Protection Standards, 45,72 latest addition.

1.4 ATTACHMENTS TO CONCRETE

No drilled inserts or powder-actuated fasteners are permitted by any trade in pre-stressed concrete except as specifically authorized by the General Contractor and carried out under the direct supervision of its Superintendent.

Only those devices with a maximum controlled penetration of 0.75" or less will be permitted. Make holes through slabs by means of sleeves placed no closer than 2" from tensioning cables. Core drilling will not be permitted unless unavoidable and as specified in Section 01045.

1.5 EXISTING UTILITIES

The existence and location for underground utilities and construction indicated as existing are not guaranteed.

Before starting any work disturbing, moving or penetrating the ground, the Contractor shall notify the Owner’s Project Manager and the Architect/Engineer. Contractor must arrange for the locating of all buried utilities within the construction limits and obtain location information for water and sewer lines from the appropriate entity and locate and stake all known utilities before commencing the construction activities. Contractor must call UNCC and follow all UNCC guidelines.

UNCC (Utility Notification Center of Colorado) 1-800-922-1987

1.6 SURVEYS, LAYOUTS, LEVELS

General:

Working from lines and levels established by the property survey, establish and maintain benchmarks and other dependable markers to set the lines and levels for the work at each story of construction and elsewhere on the site as needed to properly locate every element of the work of the entire project.

As construction proceeds, check every major element for line, level and plumb.

Calculate and measure required dimensions as shown within recognized tolerances. Do not scale the drawings to determine dimensions. Advise entities engaged in construction activities of the marked lines and levels provided for use.

Record deviations from the required lines and levels, and advise the Architect promptly upon detection of deviations exceeding indicated or recognized tolerances. Record deviations, which are accepted (not corrected), on the record drawings. Refer to Section 01720 for record drawing requirements.

Site Improvements:

Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes and invert elevations by instrumentation and similar appropriate means.
Building Lines and Levels:

Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels and control lines and levels required for mechanical and electrical Work.

Basic Layout:

The Contractor will locate and maintain positions for building corners and primary wall lines for all entities engaged in construction and will establish final grading control levels. All other layouts, grade stakes and levels required for the Work are the responsibility of each Installer.

Surveyor:

Engage a Land Surveyor or a Professional Engineer experienced and specializing in land survey work, who is registered in the State where the project is located, to perform the services specified in this article.

Layout Procedures:

Verify layout information shown on the drawings, in relation to the property survey and existing benchmarks, before proceeding with the layout of the actual work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.

Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points, or requirements to relocate reference points because of necessary changes in grades or locations.

Promptly replace lost or destroyed project control points. Base replacements on the original survey control points.

Establish and maintain a minimum of two permanent benchmarks on the site, referenced to data established by survey control points.

Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

As the work proceeds, maintain an accurate surveyor's log or record book of such checks, available for the Architect's reference at reasonable times.

On completion of foundation walls, major site improvements, and other Work requiring field engineering services, prepare a certified survey showing dimensions, locations, angles and elevations of construction and sitework.

Final Property Survey:

Before the time of substantial completion, prepare a final property survey showing significant features (real property) for the Project. Include on the survey a certification, signed by the surveyor, to the effect that principal meets and bounds, lines and levels of the Project are accurately positioned as shown on the survey.

Recording: At substantial completion, have the final property survey recorded by or with local governing authorities as the official "property survey".
Submit one **electronic** and **one paper** copy of the final property survey, together with a certified statement that the lines and levels of the work comply with the requirements of the Contract Documents, and listing authorized or accepted deviations (cross-referenced to change order number, where applicable).

1.7 CONTRACTOR'S CONSTRUCTION SCHEDULE

Furnish Construction Schedule, as required by General Conditions, not less than four (4) copies.

Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.

Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.

Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.

Indicate completion in advance of the date established for substantial completion. Indicate substantial completion on the schedule to allow time for the Architect's procedures necessary for certification of substantial completion.

Bar Chart Schedule:

Prepare a fully developed, horizontal bar chart type Contractor's construction schedule. Submit within 30 days of the date established for "Commencement of the Work".

Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".

Within each time bar, indicate estimated completion percentage in 10% increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.

Include listing of Subcontractors, suppliers and materials agent with name of contact person, address and phone number.

Critical Path Schedule:

Submit within 30 days of the date established for “Commencement of the Work”, a critical path network showing each unit of work broken down in sufficient detail to meet network logic and actual project conditions giving early and late starts for each unit, the critical path, and corrected for normal weather delays and plotted on calendar time. Present in graphic form. Include latest dates for decisions for work specified by allowance, selection of colors, finishes, etc.

These critical path diagrams and printouts shall be prepared by persons skilled and experienced in this technique and who use computer facilities to prepare the schedule; all subject to the acceptance by the Owner and Architect.

Updating:
The schedules shall be updated and reissued monthly and shall reflect actual job progress, delays or gains of time and any rescheduling. The original schedule and each updating shall be furnished in four (4) copies, one to the Owner and three to the Architect. All costs for this scheduling shall be borne by the Contractor. Submit Architect's copies as a part of each pay request, which will not be processed without such updates.

When schedule revisions affect the submittals schedule, revise that schedule and submit to Architect with revised Construction Schedule.

1.8 PROGRESS PHOTOGRAPHS

On date work at the site begins, and once each month thereafter until the building is enclosed, and on or about the date of final completion, furnish one set of progress photographs sending one set of prints to the Owner and one to the Architect.

One set shall consist of two photographs, each made from a viewpoint designated by the Architect, and two prints of each photograph. Cost of progress photographs shall be paid for by the Contractor.

Each print shall be color, on glossy paper, cloth backed, unmounted, size 8" x 10", and suitably identified and dated on the face. Photos must be clear, sharp and show details. Employ an experienced professional photographer for this work.

1.9 DELIVERY, STORAGE AND HANDLING

Properly carton, crate, cover and protect materials, products and equipment for shipping, handling and storing. Use appropriate means for hoisting and loading which will prevent damage or overstress to items being handled or shipped. Store them under roof in controlled environment whenever feasible, otherwise store off the ground under suitable coverings properly secured against wind and weather. Protect all items from rain, snow, moisture, wind, cold, heat, frost, sun, staining, discoloration, deterioration and physical damage from any cause. Refer to individual sections for specific requirements.

1.10 ENVIRONMENTAL HEALTH AND SAFETY

Physical, Life, and Fire Safety:

All contractors are required to conform to the Federal Occupational Safety and Health Administration (OSHA) regulations for construction (29 CFR 1926). Certain General Industry Standards (29 CFR 1910) may also apply, depending on location of work. These rulings will apply to owners/operators, sub-contractors and all employees working for these entities.

The Contractor shall have in place an effective health and safety program to control hazards, including but not limited to compressed gases, welding, electrical, safety netting, cranes, scaffolding and supplies on the roof.

Fire protection will be maintained in the construction area to the satisfaction of the local Fire Department and Owner.

During the construction phase, the Owner's staff may conduct oversight inspections to observe and provide recommendations regarding applicable safety standards. The following minimum items are included:

Exit corridors and exit doors will not be blocked without making prior arrangements and installing signage for alternate exit routes.
The Contractor will provide physical barriers with appropriate warning signage to protect public areas from construction work.

The Contractor will conduct daily inspections to eliminate fire hazards and any other safety hazards.

Periodic safety inspections will be performed on job sites by the Owner’s EHS Department. The Authority having jurisdiction for Fire Safety will present the Owner’s Project Manager with a written summary of the findings. The Project Manager will then take these issues to the Contractor’s superintendent, foreman or other designated representative and return the summary form with documentation of the resolution of safety items to EHS, through the Project Manager. Deficient items will be expected to be abated in a timely manner. Documentation of safety items presented and resolution of those items must appear in the minutes of the Owner/Architect/Contractor (OAC) meetings. Inspections by EHS personnel are spot-checks only. They are not expected to be all encompassing. These inspections and recommendations do not relieve the Contractor from obligations related to safe work practices, as required under federal law.

EHS personnel have the right to access the site at all times. Should a potential threat to personnel or property be observed, EHS personnel may stop the hazard related operation until adequate safeguards are addressed.

The Contractor shall supply the EHS, through the Project Manager, with copy of Contractor’s weekly safety meeting minutes and safety inspection reports.

The Contractor will provide signs used for proper identification of construction areas.

The Contractor will provide an adequate number of appropriately rated fire extinguishers to be available on-site for emergency use in the construction area.

Standpipes, pull stations, electrical panels, water control valves and fire hydrants will be accessible at all times.

The Contractor and Owner will provide emergency notification phone numbers to be posted in all construction areas.

The Contractor must notify Owner of any lost time injuries occurring on Owner’s property within one (1) working day and of any fatalities immediately.

The Contractor shall submit copies of all injury reports to EHS, through the Owner’s Project Manager.

OSHA Hazard Communication Standard:

Every Contractor and Subcontractor performing work shall to comply with the OSHA Hazard Communication Standard. Compliance includes joint Owner and Contractor responsibilities for the purpose of providing timely communications and information sharing with regard to hazardous materials, chemicals and chemical sources which may be present on-site or brought in by the Contractor.

The Owner will provide Contractor with the following:
Information regarding known hazardous chemicals and agents or other hazards present at the job site.

Owner emergency procedures and contact numbers.

The Contractor is responsible for all safety training and environmental surveillance of their workers.

The Contractor shall inform and provide Owner’s Project Manager the following information:

Material safety data sheets (MSDS) for all chemicals introduced into the workplace.

The information regarding potential sources of pollutants which may be entrained in Owner's air intakes, i.e., roofing tar fumes, nuisance dusts, exhaust from internal combustion engines, welding or cutting fumes, and asbestos - if damaged or encountered during the course of the work.

Asbestos and Lead Paint:

The presence of asbestos-containing materials and/or paint containing lead on the job site does not mean a problem exists. Areas where asbestos is friable and not contained or lead paint is present or will be caused to be present in airborne or settled dust are of concern.

There are several Owner and Contractor responsibilities regarding asbestos and lead paint. These are:

The Owner shall:

Notify the Contractor of the condition and location(s) where asbestos is known to be present or may reasonably be encountered (i.e., asbestos insulation, ceiling tiles, floor tiles, fire doors, wall and ceiling plasters, concrete, grouting, etc., and lead paint on metal building materials, walls, windows, etc.).

Coordinate with the Contractor when response action is required by either the Owner's Asbestos Abatement Team or by a Subcontractor.

Monitor areas where friable asbestos and/or lead-containing particles are present during construction/renovation projects for its own records and purpose. Monitoring results can be shared with Contractors but are in no way to be used for Contractor employee monitoring.

Have the final authority on all asbestos-related concerns and contractual arrangements.

The Contractor shall:

Notify the Owner's Project Manager of any suspected or existing problem involving asbestos or lead and cease work in that area until the Owner has assessed the situation.

Ensure that undamaged asbestos-containing material and/or material containing lead, not included in the scope of the project, are not damaged.
Follow all Owner guidelines and policies.

Train and monitor their own employees, including Asbestos Awareness training and Lead Paint Awareness training, where applicable.

Be responsible for all environmental/industrial hygiene surveillance of its work staff and subcontractors and for required area monitoring where potential contamination of adjacent areas exists.

Prevent problems which can result in asbestos or lead exposure to building occupants.

Coordinate with the Owner’s EHS Department and Facilities Operations through the Owner’s Project Manager and perform all activities that may potentially disturb asbestos containing materials in a manner acceptable to the EHS.

Follow State of Colorado regulation, Emission Standards for Asbestos, Part B, Control of Asbestos, “Regulation 8” and OSHA standards regulating exposure to asbestos and lead.

The Contractor will follow Section 2085 for Asbestos related work and follow most current “Anschutz Medical Campus” Asbestos soil protocol when excavating on projects.

Carcinogens:

Contractor or any subcontractor shall not knowingly install or cause to be installed any material or product containing carcinogens. Refer to Annual Report on Carcinogens, U.S. Department of Health and Human Services, National toxicology Program.

Hazardous Waste:

All hazardous wastes are to be handled and disposed of according to current EHS guidelines, through the Owner's Project Manager. Only individuals specifically authorized by the Owner may sign hazardous waste manifests for wastes generated on Owner’s property. Only Owner approved transporters and disposal facilities are to be used for transportation and disposal of hazardous wastes. Hazardous wastes exhibit characteristics of corrosiveness, ignitability, reactivity, and toxicity (i.e., lacquer thinner, mineral spirits, etc.)

The Control of Hazardous Energy (Lockout/Tagout):

All contractors shall have a program for the control of hazardous energy (lockout/tagout) and shall enforce their own procedures. They shall provide their own locks, tags and lockout devices. They shall provide proof that their employees have received safety training in the control of hazardous energy through lockout/tagout.

Hot Work Operations:

All contractors shall have a program for the control of fires during hot work operations. Contractor shall provide their own appropriately rated fire extinguishers, fire retardant protective covers (when needed), and any other hot work related equipment. On Owner's property, the Contractor shall notify the Owner’s Project Manager in advance of any hot work.

Confined Space Entry:
Whenever any project requires entry into a confined space, all contractors shall be prepared to work in compliance with the Confined Spaced Entry Procedure for Non-UC Denver Personnel. A copy of this procedure can be obtained from the EHS through the Owner’s Project Manager.

Green Tagging of Work Area:

To all Contractors: Prior to any work being conducted in a laboratory, it must be assured that a Green Tag and construction permit have been issued. If a Green Tag has been issued, it will be displayed at the entry of the laboratory area. The Green Tag assures that any radioactive, chemical or biological materials have been removed from the laboratory verifying the area is free from hazards to the workers. If a Green Tag has not been displayed, the tagging should be coordinated with EHS through the Owner’s Project Manager.

PART 2 - PRODUCTS

(Not applicable)

PART 3 - EXECUTION

(Not applicable)

END OF SECTION
SECTION 01170
PROPERTY PROTECTION PROCEDURES

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Procedures for establishing existing conditions and monitoring procedures for protection of adjacent or nearby structures and improvements including, but not limited to, sidewalks, landscaping, parking facilities, roadways, or driveways, whether on or off the Owner's property arising from [drilled caissons] [underpinning existing foundations] [new foundations or excavations below adjacent or nearby buildings] [sheet piling].

1.2 OWNER'S SURVEY

Owner has obtained visual inspections of adjacent and nearby buildings together with photographic records showing details and conditions. This survey was made on [] and the photographs are dated and certified by the photographer as of that date. One set of these data is available for Contractor's use and records.

1.3 SUBMITTALS

Submit photographs and survey data from same points as original, certified and dated by photographer and taken upon completion of [pile driving] [caisson work] [underpinning existing foundations] [backfilling] [].

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.0 EXAMINATION

Carefully review Owner's report and photographic information, inspect actual conditions and report in writing to the Owner’s Project Manager and the Architect any discrepancies between actually observed conditions and those indicated in the information provided by the Owner. Provide additional information where not covered in Owner's data for conditions or locations that the Contractor, as the construction expert, believes relevant to conditions or that may be affected by construction operations.

Provide additional photographs or other documentation and review actual in-place conditions with Owner’s Project Manager and Architect.

Do not proceed until all conditions which might be affected by the Work have been fully documented.

3.1 MONITORING
Establish accurate levels and positions of all elements relative to other fixed points to permit accurate monitoring of potential changes.
At all times during construction activities which are likely to affect adjacent properties, improvements or building, monitor conditions carefully including horizontal or vertical movements, changes in existing cracks, joints or defects or development of new cracks and other evidence of changing conditions. Report immediately to Owner’s Project Manager and Architect any changes to existing conditions and stop work where such appear to be significant or potentially dangerous to persons or property.

3.2 REMEDIES

Conduct construction operations and specifically [excavation] [caisson drilling] [sheet piling] [underpinning] [shoring] in a manner that will avoid damage to adjacent buildings, structures, properties or improvements. Promptly remedy any such damage whether to Owner's or other property and hold the Owner harmless from such damage.

3.3 POST-CONSTRUCTION SURVEY

Within 30 days of completion of those construction activities that would potentially damage adjacent or nearby properties, re-survey all items of Owner's original survey and Contractor's supplemental information, including monitoring control points. Perform this work using a licensed surveyor and independent photographer. Identify specifically each changed condition, its magnitude and probable cause.

END OF SECTION
SECTION 01200
PROJECT MEETINGS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

The types and minimum requirements for project meetings for the following categories:

- Pre-construction meeting;
- Progress and Coordination meetings;
- Pre-installation conferences;
- Specially called meetings.

Related Sections:

Information for Bidders: Pre-bid conference
Section 01105 Administration, Procedures and Codes

1.2 REQUIREMENTS

Contractor shall schedule and administer periodic pre-construction meetings, progress meetings, pre-installation conferences, and specially called meetings throughout progress of the Work including the following:

- Prepare agenda for meetings.
- Distribute written notice of each meeting four days in advance of meeting date.
- Make physical arrangements for meetings.
- Preside at meetings.
- Record the minutes; include significant proceedings and decisions.
- Reproduce and distribute copies of minutes within three days after each meeting and send to:
  - Participants in the meetings (2 copies to Architect)
  - Parties affected by decisions made at the meeting

Representatives of Subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

Architect may attend meetings to ascertain that Work is expedited consistent with Contract Documents and construction schedules.
1.3 PRE-CONSTRUCTION MEETING

Owner will schedule within 15 days after date of Notice to Proceed and preside at a pre-construction meeting to be held at a central site location designated by the Owner and convenient for all parties.

Attendance:

Owner’s Representatives:

   Project Manager  
   Fac. Ops.  
   UP  
   PT  

   Architect and their professional consultants;  
   Contractor’s Project Manager and Superintendent; 
   Major Subcontractors; 

Suggested Agenda:

   Distribution and Discussion of:

   List of major Subcontractors and suppliers; 
   Projected construction schedules. 

   Critical Work Sequencing.  
   Indoor Air Quality Plan and Monitoring  
   Major Equipment Deliveries and Priorities. 

   Project Coordination:  
   Designation of responsible personnel.  

   Procedures and Processing of: 

   Field decisions. 
   Proposal requests. 
   Submittals. 
   Change Orders. 
   Applications for Payment. 

   Adequacy of Distribution of Contract Documents.  
   Procedures for Maintaining Record Documents.  

   Use of Premises: 

   Office, work and storage areas;  
   Owner’s requirements.
Temporary Construction Facilities, Utilities, and Controls.
Construction Parking and Staging.
Construction Route and Site Access.
Safety, First-Aid, Security and Housekeeping Procedures.
Administrative Procedures and Documents as Required by the Owner.

1.4 PROGRESS AND COORDINATION MEETINGS

The Contractor will schedule weekly job progress and coordination meetings at the site. Subcontractors or their representatives are required to attend and may not start their work at the site without having first attended a prior coordination meeting.

Attendance:

Owner’s Representatives:

- Project Manager
- Health Safety Department
- Facilities Operations Representative
- Campus Building Official

Contractor’s Superintendent & Project Manager
Subcontractors as appropriate to the agenda.
Suppliers as appropriate to the agenda.
Architect’s professional consultants (when necessary).
Others.

Suggested Agenda:

- Site Safety
- *Indoor Air Quality Plan and Routine Monitoring*
  - Review, approval of minutes of previous meeting.
  - Review of work progress since previous meeting.
  - Field observations, problems, conflicts.
  - Problems which impede Construction Schedule.
  - Review of off-site fabrication, delivery schedules.
  - Corrective measures and procedures to regain projected schedule.
  - Revisions to Construction Schedule.
  - Progress, schedule, during succeeding work period.
  - Coordination of schedules.
  - Review submittal schedules; expedite as required.
  - Maintenance of quality standards.
  - Pending changes and substitutions.
  - Review proposed changes for:

    - Effect on Construction Schedule and on completion date.
    - Effect on other contracts of the Project.
1.5 PRE-INSTALLATION CONFERENCES

Conduct pre-installation conferences at the site for those installations, systems or assemblies where required by the Specifications or where deemed necessary by the Contractor. The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Owner’s Project Manager of scheduled meeting dates.

Review the progress of other construction activities and preparations for the particular activity under consideration at each pre-installation conference.

Record significant discussions and agreements and disagreements of each conference, along with the approved schedule. Distribute the record of the meeting to everyone concerned, promptly, including the Owner’s Project Managers and Architect.

Do not proceed if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

PART 2 PRODUCTS

(Not applicable)

PART 3 - EXECUTION

(Not applicable)
SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Administrative and procedural requirements for submittal and review of product data, shop drawings, samples and similar items required by the specifications.

Related Sections:

Refer to appropriate sections of Divisions 2 through 16 for additional submittal requirements (if any).

1.2 ADMINISTRATIVE SUBMITTALS

Refer to other Division 1 sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

- Schedules
- Permits
- Applications for payment
- Performance and payment bonds
- Insurance certificates
- List of Subcontractors
- Schedule of Values
- Inspection and test results
- Closeout documents
- Coordination drawings
- Street and Storm Water Quality Management Plan
- Indoor Air Quality Management Plan
- Anschutz Medical Campus Street Services Request

Such submittals are for information and record and the Architect shall verify conformity with the Contract Documents. If such non-conformity is observed, the Architect will notify the Contractor within two weeks of receipt of document. Failure to observe or notify by the Architect does not relieve Contractor of compliance with Contract Documents.

1.3 SUBMITTAL PROCEDURES

General:

Make submittals from Contractor to the Architect after Contractor has reviewed each submittal and indicated their action thereon except for samples and selection submittals.
Scheduling:

Prepare a separate listing and schedule organized by related specification section number sequence, showing the principal work-related submittals and their initial submittal dates as required for coordination of the work. Submit listing within 30 days after notice to proceed with construction or commencement of work.

Submit with Contractor's construction schedule, a complete schedule of submittals.

Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.

Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:

- Scheduled date for the first submittal;
- Related section number;
- Name of Subcontractor;
- Description of the part of the Work covered;
- Scheduled date for resubmittal;
- Scheduled date the Architect's final release or approval;
- Include related CPM event numbers, if CPM scheduling is used.

Schedule Updating:

Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

Coordination:

Coordinate the preparation and processing of submittals with the performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

Processing:

Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

Allow 2 weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
If an intermediate submittal is necessary, process the same as the initial submittal.

Allow 2 weeks for reprocessing each submittal.

No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

Submittal Preparation:

Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

Include the following information on the label for processing and recording action taken.

- Project name
- Date
- Name and address of Architect
- Name and address of Contractor
- Name and address of Subcontractor
- Name and address of supplier
- Name of manufacturer
- Number and title of appropriate Specification Section
- Drawing number and detail references, as appropriate.

Submittal Transmittal:

Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

On the transmittal record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.4 SHOP DRAWINGS

Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.

Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:

- Dimensions;
- Identification of products and materials included;
- Compliance with specified standards;
- Notation of coordination requirements;
- Notation of dimensions established by field measurement.
Submit initially, one correctable, translucent, reproducible print and one blue- or black-line print each for Architect, and where applicable, the Consulting Engineer. Concurrently, submit one print to the Owner.

Contractor will provide prints of marked up reproducible as may be required for their use and that of their Subcontractors and suppliers.

Final submittal shall be delivered to the Architect with sufficient copies so that desired distribution can be made by Contractor, one copy each to the Architect, their consulting engineer where applicable, the Contractor's field office, their home office, the Record Documents, the fabricator, and any others involved in the submittal.

If initial submittal becomes final submittal, provide sufficient additional copies that may be needed to meet these requirements.

Where shop drawings are indicated to be submitted for "information only", submit three sets of prints to Architect and retain one set for Project Record Documents.

1.5 PRODUCT DATA

Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, rough-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings".

Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information.

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

Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

Submittal is for information and record, unless otherwise indicated; and therefore, initial submittal is final submittal unless returned promptly by the Architect marked with an "action" which indicates an observed non-compliance.

Submit copies as above specified for final submittal of shop drawings. Where applicable, include additional copies for maintenance manuals. Submit a covering letter to show Contractor's review and action.

1.6 SAMPLES

Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range set and swatches showing color, texture and pattern.
Mount, display or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:

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

Submit Samples to Architect who will review them solely for kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.

Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

**Preliminary Submittals:**

- Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.

  Preliminary submittals will be reviewed and returned with the Architect's mark indicating selection and other action.

**Submittals:**

- Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.

  Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.

  Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

  Sample sets may be used to obtain final acceptance of the construction associated with each set.

**Distribution of Samples:**

- Prepare and distribute additional sets to Subcontractors, manufacturers, fabricators, suppliers, Installers, and others as required for performance of the Work. Show distribution on transmittal forms.

**Field Samples and Mock-Ups:**

- Field Samples and mock-ups specified in individual Sections are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.
Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.7 SELECTIONS SUBMITTAL

Where selections of colors, patterns, textures are specified to be made by the Architect, assemble complete samples of all specified or approved products for all specification sections and submit to Architect. Review specifications and assemble all such samples for a combined single submittal. Indicate on the transmittal the latest date for selections to be made for each item to permit delivery of material in accordance with Progress Schedule. Architect's action is limited solely to the specified selections or rejection of submittal items not in accordance with Specifications.

Inspection and Test Reports:

Where standard tests are specified for products, including equipment, which tests are not performed at the job site, follow procedures for Product Data. For field inspection and tests specified to be performed by independent agencies, such agencies shall transmit directly one copy each to the Architect, their consulting engineer where applicable, the Owner’s Project Manager and the Contractor with an extra copy for Record Documents.

PART 2 - PRODUCTS

(Not applicable)

PART 3 - EXECUTION

(Not applicable)

END OF SECTION
SECTION 01352

INDOOR AIR QUALITY

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:
   1. Special requirements for Indoor Air Quality (IAQ) management during construction operations.
      a. Control of emissions during construction.
      b. Moisture control during construction.
   2. Procedures for testing baseline IAQ. Baseline IAQ requirements specify maximum indoor pollutant concentrations for acceptance of the facility.

B. Related Sections:
   1. 01105- Administration, Procedures and Codes
   2. 01400 – Quality Control

1.2 DEFINITIONS

A. Definitions pertaining to sustainable development: As defined in ASTM E2114.

B. Adequate ventilation: Ventilation, including air circulation and air changes, required to cure materials, dissipate humidity, and prevent accumulation of particulates, dust, fumes, vapors, or gases.

C. Hazardous Materials: Any material that is regulated as a hazardous material in accordance with 49 CFR 173, requires a Material Safety Data Sheet (MSDS) in accordance with 29 CFR 1910.1200, or which during end use, treatment, handling, storage, transportation or disposal meets or has components which meet or have the potential to meet the definition of a Hazardous Waste in accordance with 40 CFR 261. Throughout this specification, hazardous material includes hazardous chemicals.
   1. Hazardous materials include: pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environmental Protection Agency (EPA) and the International Agency for Research on Cancer (IARC).

D. Indoor Air Quality (IAQ): The composition and characteristics of the air in an enclosed space that affect the occupants of that space. The indoor air quality of a space refers to the relative quality of air in a building with respect to contaminants and hazards and is determined by the level of indoor air pollution and other characteristics of the air, including those that impact thermal comfort such as air temperature, relative humidity and air speed.

E. Interior final finishes: Materials and products that will be exposed at interior, occupied spaces; including flooring, wallcovering, finish carpentry, and ceilings.

F. Packaged dry products: Materials and products that are installed in dry form and are delivered to the site in manufacturer's packaging; including carpets, resilient flooring, ceiling tiles, and insulation.

G. Wet products: Materials and products installed in wet form, including paints, sealants, adhesives, special coatings, and other materials which require curing.
1.3 QUALITY ASSURANCE

A. Inspection and Testing Lab Qualifications: Minimum of 5 years experience in performing the types of testing specified herein.

B. Coordinate with Section 01560 – Construction Cleaning

1.4 PRECONSTRUCTION MEETING

A. After award of Contract and prior to the commencement of the Work, schedule and conduct meeting with Owner and Architect to discuss the proposed IAQ Management Plan and to develop mutual understanding relative to details of environmental protection.

1.5 SUBMITTALS

A. Indoor Air Quality (IAQ) Management Plan: Not less than 10 days before the Pre-construction meeting, prepare and submit an IAQ Management Plan including, but not limited to, the following:
   1. Procedures for control of emissions during construction.
      a. Identify schedule for application of interior finishes.
   2. Procedures for moisture control during construction.
      a. Identify porous materials and absorptive materials.
      b. Identify schedule for inspection of stored and installed absorptive materials.
   3. Revise and resubmit Plan as required by Owner.
      a. Approval of Contractor’s Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations.

B. Product Data:
   1. Submit product data for filtration media used during construction and during operation. Include Minimum Efficiency Reporting Value (MERV).
   2. Submit air pressure difference maps for each mode of operation of HVAC.
   3. Material Safety Data Sheets: Submit MSDSs for inclusion in Operation and Maintenance Manual for the following products. Coordinate with Section 01 78 23 (01830).
      a. Adhesives.
      b. Floor and wall patching/leveling materials.
      c. Caulking and sealants.
      d. Insulating materials.
      e. Fireproofing and firestopping.
      f. Carpet.
      g. Paint.
      h. Clear finish for wood surfaces.
      i. Lubricants.
      j. Cleaning products.

C. Inspection and Test Reports:
   1. Moisture control inspections.
   2. Moisture content testing.
   3. Moisture penetration testing.
   4. Microbial Growth testing.

PART 2 PRODUCTS
PART 3 EXECUTION

3.1 IAQ MANAGEMENT - EMISSIONS CONTROL

A. During construction operations, follow the recommendations in SMACNA IAQ Guidelines for Occupied Buildings under Construction.

B. HVAC Protection:
   1. Seal return registers during construction operations.
   2. Provide temporary exhaust during construction operations.
   3. To the greatest extent possible, isolate and/or shut down the return side of the HVAC system during construction. When ventilation system must be operational during construction activities, provide temporary filters.

C. Source Control: Provide low and zero VOC materials as specified.

D. Pathway Interruption: Isolate areas of work as necessary to prevent contamination of clean or occupied spaces. Provide pressure differentials and/or physical barriers to protect clean or occupied spaces.

E. Housekeeping: During construction, maintain project and building products and systems to prevent contamination of building spaces.

F. Temporary Ventilation: Provide an ACH (air changes per hour) of 10 (adjust as necessary based on project) or more and as follows:
   1. Provide minimum 48 hour pre-ventilation of packaged dry products prior to installation. Remove from packaging and ventilate in a secure, dry, well-ventilated space free from strong contaminant sources and residues. Provide a temperature range of 60 degrees F minimum to 90 degree F maximum continuously during the ventilation period. Do not ventilate within limits of Work unless otherwise approved by Architect.
   2. Provide adequate ventilation during and after installation of interior wet products and interior final finishes.
   3. Provide filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 as determined by ASHRAE 52.2 during construction [and during Owner occupancy]. Coordinate with work of Division 15, Heating Ventilating and Air Conditioning (HVAC).

G. Scheduling: Schedule construction operations involving wet products prior to packaged dry products to the greatest extent possible.

H. Flush-Out: After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%.

3.2 IAQ MANAGEMENT - MOISTURE CONTROL

A. Housekeeping:
   1. Keep materials dry. Protect stored on-site and installed absorptive materials from moisture damage.
2. Verify that installed materials and products are dry prior to sealing and weatherproofing the building envelope.
3. Install interior absorptive materials only after building envelope is sealed and weatherproofed.

B. Inspections: Document and report results of inspections; state whether of not inspections indicate satisfactory conditions.
1. Examine materials for dampness as they arrive. If acceptable to Architect/Owner, dry damp materials completely prior to installation; otherwise, reject materials that arrive damp.
2. Examine materials for mold as they arrive and reject materials that arrive contaminated with mold.
3. Inspect stored and installed absorptive materials regularly for dampness and mold growth. Inspect weekly.
   a. Where stored on-site or installed absorptive materials become wet, notify architect and owner. Inspect for damage. If acceptable to Architect/Owner, dry completely prior to closing in assemblies; otherwise, remove and replace with new materials.
3. Basement: Monitor basement and crawlspace humidity, and dehumidify when relative humidity is greater than 85 percent for more than 2 weeks or at the first sign of mold growth.
4. Site drainage: Verify that final grades of site work and landscaping drain surface water and ground water away from the building.
5. Weather-proofing: Inspect moisture control materials as they are being installed. Include the following:
   a. Air barrier: Verify air barrier is installed without punctures and/or other damage. Verify air barrier is sealed completely.
   b. Flashing: Verify correct shingling of the flashing for roof, walls, windows, doors, and other penetrations.
   c. Insulation layer: Verify insulation is installed without voids.
   d. Roofing: In accordance with ASTM D7186 Standard Practice for Quality Assurance Observation of Roof Construction and Repair
6. Plumbing: Verify satisfactory pressure test of pipes and drains is performed before closing in and insulating lines.
7. HVAC: Inspect HVAC system as specified in Section 01 91 00 (01810) – Commissioning. [And, inspect HVAC to verify:
   1. condensate pans are sloped and plumbed correctly;
   2. access panels are installed to allow for inspection and cleaning of coils and ductwork downstream of coils;
   3. ductwork and return plenums are air sealed;
   4. duct insulation is installed and sealed; and
   5. chilled water line and refrigerant line insulation are installed and sealed.]

C. Schedule:
1. Schedule work such that absorptive materials, including but not limited to porous insulations, paper-faced gypsum board, ceiling tile, and finish flooring, are not installed until they can be protected from rain and construction-related water.
2. Weather-proof as quickly as possible. Schedule installation of moisture-control materials, including but not limited to air barriers, flashing, exterior sealants and roofing, at the earliest possible time.
D. Testing for Moisture Content: Test moisture content of porous materials and absorptive materials to ensure that they are dry before sealing them into an assembly. Document and report results of testing. Where tests are not satisfactory, dry materials and retest. If satisfactory results cannot be obtained with retest, remove and replace with new materials.

1. Concrete: [Moisture test prior to finish flooring application as specified in Division 09 (9).] [Moisture test as per one or more of the following; unless otherwise indicated, acceptable upper limits for concrete are < 4% top inch; < 85% headspace RH; < 3 lbs/1000ft²/day:
   a. ASTM D4263 Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
   b. ASTM F1869 Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
   c. ASTM F2170 Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes]

2. Wood: Moisture test as per ASTM D4444 - Standard Test Methods for Use and Calibration of Hand-Held Moisture Meters; unless otherwise indicated acceptable upper limits for wood products are < 20% at center of piece; < 15% at surface.

3. Gypsum Board, Gypsum Plaster, Insulation, and other absorptive materials: Moisture test with a Pinless Moisture Meter to assess patterns of moisture, if any.

E. Testing for Moisture Penetration:

1. Windows: Test as per ASTM E1105 Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference; unless otherwise indicated, acceptable upper limits are no leakage for 15 minutes.

2. Horizontal Waterproofing (not roofing): Test as per ASTM D5957 Standard Guide for Flood Testing Horizontal Waterproofing Installations; acceptable upper limits are no leakage for 15 minutes.

3. Masonry: Test as per ASTM C1601 Standard Test Method for Field Determination of Water Penetration of Masonry Wall Surfaces; acceptable upper limits are no leakage for 15 minutes.

4. Exterior Walls:
   a. Air tightness of the enclosure test: ASTM E779 Standard Test Method for Determining Air Leakage Rate by Fan Pressurization or ASTM E1827

F. Testing for Support of Microbial Growth: Test and report in accordance with ASTM D6329 Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers. Indicate susceptibility of product or material to colonization and amplification of microorganisms. Identify microorganisms and conditions of testing.

1. Normal conditions: Perform testing at 35 degrees Centigrade and 50 percent relative humidity.

2. Extreme conditions: Perform worst case scenarios screening tests by providing an atmosphere where environmental conditions may be favorable for microbial growth.

3. Perform testing for the following:
   a. Fireproofing material on appropriate substrate.
   b. Ceiling tile.
   c. Wall covering.
   d. other appropriate material
END OF SECTION
SECTION 01400
QUALITY CONTROL

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Administrative and procedural requirements for quality control services.

Field samples.
Mock-ups.
Inspection and testing laboratory services.
Manufacturer's field services and reports.

Related Sections:

General Conditions: Inspections, testing and approvals required by public authorities
Section 01045 Cutting and Patching
Section 01090 Reference Standards
Section 01300 Submittals
Section 01720 Project Record Documents
Inspections and tests required and standards for testing: Individual Specification sections.
Testing, adjusting and balancing of mechanical systems: Division 15.
Electrical system tests: Division 16.

1.2 REFERENCES

ASTM D3740, "Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction."

ASTM E329, "Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction."

Should specified reference standards conflict with the Contract Documents, Contractor shall request clarification from the Architect before proceeding.

1.3 DEFINITIONS

Quality control services include inspections and tests, and related actions including reports, performed by independent agencies, governing authorities, and Contractor. Contract enforcement activities performed by the Architect are not included.

Inspection and testing services required to verify compliance with requirements specified do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
Requirements of this Section relate to customized fabrication and installation procedures and not production of standard products.

Specific quality control requirements, inspections and tests, covering production, customized fabrication and installation procedures of standard products are specified in the individual sections.

Inspections, tests and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Documents.

Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.4 RESPONSIBILITIES

Contractor Responsibilities:

Provide inspections, tests and similar quality control services, specified in individual specification sections and required by governing authorities, except where they are indicated to be Owner's responsibility, or are provided by another entity. These services include those specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.

The Contractor shall employ and pay an independent agency, to perform specified quality control services.

Retesting:

The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not meet specified requirements, regardless of whether the original test was the Contractor's responsibility.

Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility regardless of the results, where required tests were performed on original construction.

Limitations:

Where manufactured products or equipment are required to have representative samples tested, do not use such materials or equipment until tests have been made and the materials or equipment found to be acceptable. Do not incorporate in the work any product which becomes unfit for use after acceptance.

Associated Services:

The Contractor shall cooperate with Owner or other agencies performing required inspections, tests and similar services and provide reasonable associated services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Associated services required include:

Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.

Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.

Providing adequate facilities for safe storage and proper curing of concrete test cylinders on the project site for the first 24 hours after casting as required by ASTM C31.

Providing the agency with a preliminary design mix proposed for use for material mixes that require control by the testing agency.

Security and protection of samples and test equipment at the project site.

Owner Responsibilities:

The Owner will provide inspections, tests and similar quality control services specified to be performed by independent agencies and not by the Contractor, except where they are specifically indicated as the Contractor's responsibility or are provided by authorities having jurisdiction or another identified entity. Costs for these services are not included in the Contract Sum.

The Owner will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services which are the Owner's responsibility.

Duties of Testing Agency:

The independent testing agency engaged to perform inspections, sampling and testing of materials shall cooperate with the Architect and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.

The agency shall notify the Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

The agency shall not perform any duties of the Contractor.

Coordination:

The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

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.

1.5 SUBMITTALS

General:

Refer to Section 01300 for general requirements of submittals. Certified written report of each inspection, test or similar service, will be submitted directly to Architect except to Contractor with copy to Architect where service is Contractor's responsibility. Submit additional copies directly to governing authorities where requested by authority.

Report Data:

Written reports of each inspection, test or similar service shall include, but not be limited to:

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

1.6 QUALITY ASSURANCE

Qualification of Service Agencies:

Engage inspection and test service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by American Council of Independent Laboratories, which are recognized in the industry as specialized in the types of inspections and tests to be performed and which have not less than 5 years experience in such testing.

Comply with requirements of ASTM E329 and ASTM D3740.

Each inspection and testing agency shall be authorized to operate in the State of Colorado.

Maintain a full time registered engineer on staff to review services.

Calibrate testing equipment at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or of accepted values of natural physical constants.

Control of Installation:
Monitor quality control over products, services, site conditions, and workmanship to produce work of specified quality.

Comply fully with manufacturers' instructions, including each step in sequence.

Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

Perform work by persons qualified to produce workmanship of specified quality.

1.7 MOCK-UP AND FIELD SAMPLES

Install mock-up and field samples for review at the site as required by individual specification sections.

Assemble and erect specified items, with specified or required attachment and anchorage devices, flashings, seals, and finishes.

Maintain mock-up as a representation of quality level for the work until accepted by Architect.

Remove mock-up and clear area when no longer required and when authorized by Architect.

1.8 INSPECTION AND TESTING LABORATORY SERVICES

Perform inspections, tests and other services specified in individual specification sections.

Submit reports indicating observations and results of tests indicating compliance or non-compliance with Contract Documents.

1.9 MANUFACTURER'S FIELD SERVICES

When specified in respective Specification sections, Contractor shall require supplier or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting and balancing of equipment as applicable, and to make appropriate recommendations.

Manufacturer's representative shall submit written report to Architect listing observations and recommendations.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.0 REPAIR AND PROTECTION

General:
Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."

Protect construction exposed by or for quality control service activities, and protect repaired construction.

Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

3.1 SCHEDULE OF INSPECTIONS AND TESTS

The following is a summary of tests and inspections specified in the appropriate sections and compiled here for convenience of reference.

Testing Paid By Owner:

- Special testing not indicated below.
- Fill and backfill compaction density
- Caisson bearing conditions and depths
- Concrete
- Post-tensioning
- Masonry
- Structural steel connection
- Spray-on fire protection
- Built-up roof cutouts
- Asphalitic concrete paving
- Piped utilities
- Foundation drainage system
- Drainage structures and piping
- Landscape irrigation system pressure and performance
- Precast concrete
- Waterproofing
- Fluid applied membranes
- Curtainwall
- Elevator safety
- Mechanical systems balancing
- Electrical systems

END OF SECTION
SECTION 01500
TEMPORARY FACILITIES

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Minimum requirements for temporary services, utilities and facilities. Nothing in this section is intended to limit types and amounts of temporary work required, and no omission from this section will be recognized as an indication by Architect that such temporary activity is not required for successful completion of the work. The use of alternative facilities equivalent to those specified is the Contractor's option, subject to Architect's acceptance.

Except as otherwise indicated, the costs of providing and using temporary utility services are included in the Contract Sum.

1.2 QUALITY ASSURANCE

Standards:

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


Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.

Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

Definitions:

Cold Weather Protection: Is defined as all heating required during construction period prior to enclosure of the buildings.

Temporary Heat: Is defined as all heating required after enclosure of the building. A building is closed in when protection at doorways, windows, and other openings provide reasonable heat retention. Use of permanent equipment is subject to provisions of Division 15.

Temporary Utilities:
The Owner will designate to the Contractor single service connections for water and electricity. These services will be provided to the Contractor at no charge (provided the adjacent power source is capable of providing the required capacity); however, all expenses involved in connecting and disconnecting from these utilities shall be borne by the Contractor. Upon completion of the project and as a condition to final acceptance, these service connections shall be returned to their original condition.

The Contractor shall after Award of Contract and prior to the commencement of construction, notify the Owner’s Project Manager of all utility types, sizes, capacities, and characteristics required to complete the work that is specified herein as being provided by the Owner. The Owner shall make every reasonable attempt to fulfill the Contractor's utility requirements within the availability of such utilities within the building.

Arrange with the Owner and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services. Utility Outages shall be requested in accordance with the requirements of “Section 01105, Administration, Procedures, and Codes, Part 1 – General, Paragraph 1.5 Existing Utilities”.

1.3 PROJECT CONDITIONS

Scheduled Uses:

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. At the earliest feasible time, and when acceptable to the Owner and Architect or Engineer, change over from the use of temporary utility service to permanent service.

Temporary Use of Permanent Facilities:

Regardless of assigned responsibility for initial installation of a temporary facility, the primary Installer of the corresponding permanent facility shall assume responsibility for its operation, maintenance and protection during use as a temporary facility prior to the Owner's acceptance and assumed operation of the facility.

Conditions of Use:

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

PART 2 - PRODUCTS

2.0 MATERIALS AND EQUIPMENT

Provide either new or used materials and equipment for temporary facilities, which are in substantially undamaged and serviceable condition. Provide types and qualities which are recognized in the construction industry as suitable for the intended use in each application. Comply with the Utility Company requirements as applicable.

Comply with the requirements of Division 6 sections for temporary facilities using carpentry materials.

PART 3 - EXECUTION
3.0 GENERAL

Use qualified workers 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.

3.1 TEMPORARY FACILITIES BY CONTRACTOR

Use of Site:

The Contractor shall limit their use of the premises to the work areas indicated, so as to allow for Owner occupancy and use by the public.

Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.

Refer to Section 01010 for use of existing building, staging areas and parking.

Field Offices:

Provide insulated, weather-tight temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings.

Space for Contractor's field office is to be coordinated with Owner’s Project Manager and may be available on the project site.

Storage and Fabrication Facilities: (For work not subcontracted)

Install individual trailers or sheds as required to accommodate the work; sized, furnished and equipped properly.

Quantities, sizes and locations are under control of the Contractor. Comply with requirements of Section 01010.

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 acceptable to the Owner which will best serve the needs of personnel at the project site.

Provide temporary toilets as required.

Supply and maintain toilet tissue, paper towels, paper cups and similar disposable materials as appropriate for each sanitary facility, and provide appropriate waste paper containers for used materials.

Toilets: Use of the Owner's existing facilities is not permitted.
Drinking Water Fixtures: Supply drinking water for construction personnel by either water-system-connected drinking fountains or by containerized tap-dispensers with paper cups (or both), at Contractor's option.

Project Identification and Temporary Signs:

Prepare and install project identification signs at location indicated or as directed. Support signs on suitable posts and framing of treated wood or steel. Engage an experienced sign painter to apply the required colors and graphics in a neat and professional manner. Colors and graphics shall be furnished by the UCD Project Manager through the project architect and UCD resident architect. Maintain signs throughout the construction period. Do not allow the installation of other unauthorized signs, which are made visible to persons outside the project site.

Temporary Telephones:

Coordinate with the Owner's Information Services (I/S) Department to install temporary telephones at Contractor's field office, and to maintain service until notified by the Contractor to terminate service and remove instruments and lines. Pay for line installation, monthly charges, and all expenses necessary to extend service from minimum point of presence; location to be determined by I/S.

Include as part of the telephone system a telephone answering machine, a separate voice-data telephone line and a facsimile machine with adequate paper supply.

Camera:

Have a digital camera in field office.

Temporary Power:

Contractor will provide temporary power and shall coordinate with Owner's Project Manager for capacity, meeting and connection point. Temporary power capacity and connection point shall be established on the electrical site drawing when possible.

Thermometer:

Install an official project outdoor thermometer, in a shaded-from-the-sun, conveniently readable location, which will give reasonably accurate readings of the actual temperatures, and which can be reached easily for resetting. Instrument: Re-settable type indicating daily maximum and minimum temperatures. Keep a permanent daily log of those readings.

Walks:

Install and maintain temporary walkways around the construction work and to offices, toilets and similar places at the site.

Temporary Enclosure:

Where required, provide temporary enclosure for materials, equipment, work-in-progress, and completed portions of work, so as to afford protection for both the work and employees.

Provide temporary enclosure wherever temporary heat is needed and permanent building enclosure is not yet completed or adequate for the containment of temporary heat.
Coordinate temporary enclosures with ventilating and drying-of-the-work requirements, so as to avoid dangerous conditions and deleterious effects.

Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.

Temporary Partitions:

Provide temporary partitions and ceilings as required to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing areas and equipment. Include dust-proof doors and walk-off floor mats.

Where required by the Owner, provide high efficiency absolute, HEPA filters on exhaust systems to prevent air borne dust particles from entering non-construction areas.

Construction: Framing and sheet materials with closed joints and sealed edges at intersections with existing surfaces. Provide 0.50” plywood on construction side and 0.625” gypsum board on public side.

Hoists and Temporary Elevator Use:

Provide facilities for hoisting materials and workers. The selection of type, size and number of hoisting facilities for temporary use at the project site is the Contractor's responsibility.

Permanent non-designated elevators may not be used for construction purposes.

One designated existing elevator may be used at no charge to Contractor or other subcontractors for transporting personnel, small tools, materials, and equipment. Contractor will not be granted exclusive use of the designated elevator. (Owner's personnel and staff will be permitted to use this elevator as their work duties require) provided conditions are met as follows:

Entire car is lined (floor, walls, ceiling) with 0.75” Fir Plywood or equivalent;

Total load carried does not exceed rated capacity of elevator;

No materials, equipment, trash, tools or other items too large to be readily moved into and out of the car be carried in the elevator;

Before acceptance of the building, linings are removed, all exposed surfaces are in new condition, all controls, relays, other parts showing any wear have been replaced.

Entire elevator, including machinery, electrical components, doors, operators and controls are tested, adjusted, and put in new condition with specified warranties and maintenance to take effect at date of Completion Certificate;

Written clearance has been obtained from the Elevator Service Company stating that the installation is safe and complete for this use prior to using it;

The Contractor signs the Elevator Service Company's standard agreement and release forms for this usage and pays charges for maintenance, service, repairs, and reconditioning.
Barricades, Warning Signs and Lights: (For work not subcontracted)

Comply with recognized standards and code requirements for the erection of adequate barricades wherever needed to prevent accidents and losses. Paint and provide illumination and flashing lights as appropriate to conditions.

Enclosure Fence:

Within ten (10) days of mobilization, install an enclosure fence with locked entrance gates.

Locate where indicated. Provide a minimum of 6ft. high, open mesh galvanized fencing as acceptable to Architect and Owner. Base supports shall not extend outside work area where walkways are adjacent.

Covered Walkway:

Where regulations require, or where a public roadway/walkway adjoins the project site and materials may be hoisted across the walkway, erect a structurally adequate covered walkway for the passage of persons along the adjacent public street. Comply with regulations of authorities having jurisdiction.

Construct using scaffold or shoring framing, waterproofed wood plank overhead decking, protective plywood enclosure walls, handrails, barricades, warning signs, lights, safe and well-drained walkways, and similar provisions for protection and safe passage. Extend the backwall beyond the structure to complete the enclosure fence. Paint and maintain in a manner acceptable to the Architect and Owner.

Temporary Access Road:

Provide all-weather temporary access road to construction area in location as acceptable to Owner and Architect. Surface temporary access road with road base material of not less than 4" thickness and compact.

Contractor is responsible for installing temporary signage and temporary pedestrian accessways or other special considerations for Owner operations as necessary.

Contractor to provide stop sign(s) at all points of egress from construction site to meet standards established in the Manual of Uniform Traffic Code Devices (MUTCD).

Contractor is responsible for maintaining Owner access to areas affected by temporary access roads during inclement weather.

When temporary access road is no longer required, remove and grade soil to meet previous conditions. Replace all removed or damaged grass and other landscaping items to satisfaction of the Owner.

Heating During Construction:

Cold Weather Protection: Provide such heat and fuel, heating units, equipment as necessary to protect the work from damage due to cold. Maintain equipment and surroundings in a clean, safe condition.
Heat for the spaces involved under this Contract shall be provided by the Owner to the extent that these spaces are normally heated. Any additional requirements for heat shall be provided by the Contractor at no additional cost to the Owner.

Provide temporary heat required by construction activities in spaces not normally heated, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures or high humidity. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.

Provide temporary heat, as necessary, to heat enclosed spaces to the temperatures described below:

Except as otherwise specified, maintain a minimum temperature of 50 degrees, and a maximum temperature of 78 degrees. At all times during the placing, setting, and curing of plaster, drywall and ceramic tile, provide sufficient heat to produce a uniform temperature in the spaces involved of not less than 55 degrees. Before, during and through the placing of wood finish and the application of other interior finishing, varnishing, painting, etc., and until final acceptance of the work, provide sufficient heat to produce a temperature of not less than 60 degrees.

Include power and operating costs.

Heating Facilities: Install approved heating systems for general use, except where the permanent heating system of the project is available and authorized for use. Do not use permanent system unless approved in writing by the Architect subject to stipulations of usage by Mechanical Consultant.

Heating Units: Provide temporary heating units which have been tested and labeled by UL, FM or a recognized trade association related to the fuel being consumed (AGA, NEMA, or other).

Limitations: In any case, do not use open burning or salamander type temporary heating units. For liquid or gaseous-fueled units, locate outside of building or provide vents to the exterior. Take special precautions to avoid carbon monoxide build-up and damage especially to cementitious materials.

Ventilation: Provide such temporary ventilation as may be required to prevent hazardous accumulation of fumes, remove excess humidity, ventilate sanitary facilities and storage spaces for volatile and hazardous materials.

Miscellaneous Facilities:

Provide ladders, ramps, temporary stairs, for access to all levels of the construction for general access by all trades. Individual contractors and subcontractors will furnish their own stepladders, scaffolds, staging, work platforms and other facilities for use of their workers and as necessary to the expeditious completion of their work. Provide waste chutes as required by applicable laws and regulations.

Temporary Fire Protection:

Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable

Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable exit.

Store combustible materials in containers in fire-safe locations.

Maintain unobstructed access to fire extinguishers, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.

Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

Protection of Existing Trees and Vegetation:

Protect existing trees and other vegetation indicated to remain in place, against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering trees by stockpiling construction materials or excavated materials within drip line. Provide temporary guards to protect trees and vegetation to be left standing.

Historically recorded trees and vegetation will be identified by Owner and are not be disturbed

Water trees and other vegetation to remain within the limits of the contract work as required to maintain their health during the course of construction operations.

Repair or replace trees and vegetation damaged by construction operations, in a manner acceptable to the Architect. Use a qualified tree surgeon to repair tree damage.

Protection of Work:

The Contractor shall obtain the advice and recommendations of their installers for procedures to protect their work. Installers are responsible for protecting their work and that of other trades while working at the jobsite or in an area thereof. When the Installer is no longer working in the area or at the job, the Contractor shall provide protective measures and materials to assure that each element will be without damage or deterioration (other than normal weathering for exterior exposed materials) throughout the remainder of the construction period, up to the date of completion. Remove protective coverings and materials at the appropriate time but no later than final cleaning operations.

Provide protective coverings at walls, projections, jambs, sills, and soffits of openings. Protect finished floors and stairs from traffic, movement of heavy objects, and storage.

Prohibit traffic and storage on waterproofed and roofed surfaces, on lawn and landscaped areas.

Always protect excavation, trenches, and building, from damage from rain water, spring water, ground water, backing up of drains or sewers. Provide pumps, equipment, enclosures, to provide this protection.

Security:

Provide security program and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, and theft. Coordinate with University Police.
Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrance to prevent unauthorized entrance, vandalism, theft and similar violations of security.

Review with Owner prior to construction of temporary enclosure.

Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

Environmental Protection:

Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment, which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints. Reference Section 01105 for requirements.

3.2 TEMPORARY FACILITIES BY APPROPRIATE SUBCONTRACTOR

Water:

Water supply shall be adequate for all construction operations at any point within the construction. All use of water and drainage for the construction shall be coordinated by the Owner’s Project Manager prior to the initiation of work. All required permits for taps shall be obtained by the Contractor.

Temporary Fire Protection: (by Mechanical for sprinklers).

During construction, the Contractor shall coordinate temporary fire protection through the Owner’s Project Manager for requirements of the local Fire Department. Maintain in operating condition until permanent systems are in working order.

Permanent Fire Protection: At the earliest feasible date for each separate fire protection facility in each area of the project, complete the installation including connected services and place into operation and use. Instruct key personnel at the site on how to use facilities which may not be self-explanatory.

Heat and Ventilation:

Where permanent systems are used for temporary heat and ventilation, Mechanical Installer shall maintain equipment, clean, adjust, and put in new condition before building occupancy as specified in Division 15.

Light and Power: (by Electrical)

Electric light and power connections shall be adequate capacity for all construction requirements. There shall be a separate connection for light and for power, of such capacity to provide adequate light for working, for safety and for emergency, and adequate voltage and amperage for all construction operations, tools, and equipment requiring power. Stairways and exits shall be lighted at all times.
Provide a weatherproof, grounded, electric power distribution system of sufficient size, capacity and power characteristics to accommodate all activities during construction period. Include transformers, overload protected disconnects, automatic ground fault interrupters and main distribution switchgear.

Extend from temporary service point.

Extend from existing building service or panels as permitted by the Owner.

Include ground fault interruption protection for all temporary power.

Provide the following services:

- Sufficient 220v outlets for special tools, welding equipment and similar devices requiring such service at locations where required.

- Sufficient circuits and duplex 120v single phase outlets so located that any part of the work can be reached with a 75 ft. extension cord to accommodate normal power tools and supplemental lighting.

- Temporary light to levels and as required by governing regulations but not less than minimum 5 foot-candle illumination in all areas accessible to workers during hours they are at the job; minimum 10 foot-candles for shop areas; 20 foot-candles or more where detailed or finishing work is being done, supplemented as may be required.

- Provide additional lighting as required for warning, public safety, and project security.

Contractor and each Subcontractor furnish their own extension cords for power as required for their use.

Where permanent light fixtures have been used for temporary lighting, supply temporary lamps and replace with new lamps at time of Completion.

Storage and Fabrication Facilities:

- Install individual trailers or sheds as required to accommodate the work; sized, furnished and equipped properly.

- Sizes, quantities and locations are under control of the Contractor. Comply with the requirements of Section 01010.

Barricades, Warning Signs and Lights:

- Comply with standards and code requirements for the erection of structurally adequate barricades.

- Paint with appropriate colors, graphics and warning signs to inform personnel and the public of potential hazards. Where appropriate and needed, provide lighting, including flashing red or amber lights.

Cold Weather Protection:

- Provide such heat and fuel, heating units, equipment as necessary to protect the work from damage due to cold. Maintain equipment and surroundings in a clean, safe condition.
3.3 OPERATIONS AND TERMINATIONS

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 unsanitary and hazardous conditions.

Do not allow temporary offices and similar temporary or permanent spaces to be used as living quarters, or for other unintended occupancies or uses.

Janitorial Services:

Provide daily janitorial services for temporary offices, toilets, and similar areas at the project site. Require users of other temporary facilities to maintain clean and orderly premises.

Maintenance:

Installing entity shall maintain temporary facilities in good operating condition through time of use and until removal is authorized. Protect from damage by freezing temperatures and similar elements at the site.

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 Completion, promptly remove the facility unless requested by the Architect 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 installing entity.
SECTION 01561
CONSTRUCTION CLEANING

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Facilities, equipment and labor for cleaning and waste disposal during construction. Refer to Section 01710 for final cleaning.

1.2 RESPONSIBILITIES:

General:

Provide all facilities and equipment as necessary to keep the work and site clean and safe as set forth in the General Conditions, and as specified herein.

Contractor and each Subcontractor and Installer is responsible for specific cleaning operations of their work to the extent specified in the appropriate specification sections.

Packing Materials:

Immediately after uncrating or unpacking materials or equipment, remove from the building all crating, lumber, or other materials, excelsior, wrapping, or other like combustible materials to the central collection facility.

Pollution Control:

Conduct clean-up and disposal operations to comply with all applicable environmental laws.

Burning or burying of waste materials on the project site is not permitted.

Disposal of volatile fluids and wastes in storm or sanitary sewers, or into streams or waterways is not permitted.

PART 2 - PRODUCTS

2.0 CLEANING MATERIALS

Use only cleaning materials recommended by manufacturer of surface to be cleaned and use low V.O.C. and green products.

Use cleaning materials only on surfaces recommended by cleaning material manufacturer. and use low V.O.C. and green products.
PART 3 - EXECUTION

3.0 WASTE DISPOSAL

Collection and Disposal of Wastes:

Establish and enforce a daily system for collecting and disposing of waste materials from construction areas and elsewhere at the project site. Provide suitable trash containers at a central collection point on the site. Provide chutes or other suitable means for removing trash safely and cleanly from elevated portions of the work.

Comply with NFPA 241 for removal of combustible waste material and debris.

Review with Owner location of collection point. [ ]

Contractor and each Subcontractor and Installer is responsible for cleaning and removal of their trash and debris to this collection point.

Do not hold collected materials at the site for periods of more than 7 days during normal weather or three days when temperature is expected to be 80 degrees F. or above. Handle hazardous, dangerous, unsanitary, contaminating, polluting and similar harmful wastes separately from inert materials, by containerizing in an appropriate manner. Dispose of each category of waste material in a lawful manner. Do not bury or burn waste materials on the Owner's property.

Enforce strict prohibition against the washing of waste materials down sewers or into waterways.

Waste concrete and masonry shall be removed from the site and legally disposed of by masonry and concrete installers.

3.1 CLEANING UP:

Cleaning and Protection of 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.

During Construction:

Oversee cleaning and ensure that building, grounds and public properties are maintained free from accumulation of waste materials and rubbish.

Take measures to prevent spread of trash, debris, cartons, packaging or other waste materials on or off the Project Site by wind.
Sprinkle dusty debris with water.

At reasonable intervals during progress of work, cleanup site and access and dispose of waste materials, rubbish and debris.

Remove snow and ice from public sidewalks adjacent to site and from access ways to the building and construction site if applicable. [ ]

Clean adjacent and nearby streets of dirt occasioned by construction operations; frequency and methods as required by Owner and/or governing authority.

Contaminated Earth:

Remove contaminated earth and dispose of off site per all applicable environmental laws. Replace with clean soils, as approved, using materials appropriate to the location on the site and methods specified for fills and backfills.

Contaminated earth includes, but is not limited to, waste concrete, mortar and plaster; debris and waste materials; areas used for cleaning tools, washing mixers and concrete trucks and areas containing oils, solvents, paints and similar liquids or their residues.

Building Flush Out:

Contractors should flush out new buildings prior to occupancy and consider lead approach to flush out.

END OF SECTION
SECTION 01562

DUST CONTROL

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.2 SUMMARY

Section Includes:

Application of either water or dust palliative, or both, for the alleviation or prevention of dust nuisance.

Control dust resulting from the Contractor's performance of the work either on or off the jobsite.

PART 2 - PRODUCTS

2.0 MATERIAL AND EQUIPMENT

Water:

Make arrangements for securing the required volume of water.

Dust Palliative:

Binder: Either miscible in water, use be some form of material that is directly applied to the surface without water.

For binders miscible in water, use either a resin emulsion, an SSI type asphaltic emulsion, materials composed essentially of lignin sulfonate or other binder miscible in water and which is non-corrosive and effective as a dust palliative.

For binders applied to the surface without water, use a product prepared from crude petroleum, effective as a dust palliative.

Provide resin emulsion products composed of 56% to 63% semi-liquid petroleum resin and water with emulsifier, readily miscible with normal or hard water. Dilute with water at rate of one part emulsion to not more than 19 parts water, with mix showing no signs of breakdown or separation of resin base. Store resin emulsion in closed containers at temperatures above freezing. Do not use resin emulsion which has been stored for more than 3 months until tested and found acceptable.

Use environmentally friendly product if available.

PART 3 - EXECUTION

3.0 APPLICATION

Either of the following methods (or both) may be used at Contractor's option.
Water Method:

Unless otherwise permitted by the Architect, apply water by means of pipelines and sprinklers. Make available at all times a mobile unit with a minimum capacity of 1000 gallons for applying water on the project.

Apply water for compacting embankment material, fill materials, subbase base or surfacing material and for controlling dust by means of pressure type distributors or pipe lines with a spray system, or hoses with nozzles that will insure a uniform application of water.

Resin Binder Method:

Mix binders with water at the rate of 4 to 19 parts of water to one part binder, the exact rate to be determined by dust control requirements. Mix by placing binder and water in spreading equipment or by other mixing method that will produce equivalent results.

Apply the mixture with pressure type water distributor trucks equipped with a spray system or pressure type asphalt distributors at an approximate rate of 0.2 to 0.8 gallons per square yard or as required for effective dust control.

END OF SECTION
SECTION 01630

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Administrative and procedural requirements for Contractor's selection of products for use in the Project and for substitutions of products not specified or not available only. Substitutions are discouraged, unless necessary.

1.2 DEFINITIONS

Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties", "systems", "structure", "finishes", "accessories", and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.

Products: Are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "Product" includes the terms "material", "equipment", "system" and terms of similar intent.

Named Products: Are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

Materials: Are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

Equipment: Is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.3 QUALITY ASSURANCE

Source Limitations:

To the fullest extent possible, provide products of the same kind, from a single source.

Nameplates:

Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.

Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data.

- Name of product and manufacturer
- Model and serial number
- Capacity
- Speed
- Ratings
- Power characteristics (if applicable)
- UL label or compliance (if applicable).

1.4 PRODUCT LISTING

Prepare a schedule showing products specified in a tabular form acceptable to the Architect. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.

Listing of products having an aggregate value of less than $1,000 is not required.

Form: Prepare the product listing schedule with information on each item tabulated under the following column headings:

- Related specification section number;
- Generic name used in Contract Documents;
- Proprietary name, model number and similar designations;
- Manufacturer's name and address;
- Supplier's name and address;
- Installer's name and address;
- Projected delivery date, or time span of delivery period.

Initial Submittal:

Within 30 days after date of commencement of the Work, submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

Completed Schedule:

Within 60 days after date of commencement of the Work, submit 3 copies of the completed product list schedule.

Within 2 weeks of receipt of product-listing schedule, Architect will respond to Contractor in writing, indicating unacceptable selections (if any) together with a brief explanation thereof.

No response within this time period constitutes no objection to the listed product or manufacturers, but does not constitute a waiver of the requirement that products comply with the Contract Documents.
1.5 PRODUCT SELECTION

When products are specified by ASTM or other reference standards, furnish products conforming to such reference standards.

When products are specified by trade name or manufacturer's name and model number, whether or not reference standards are also specified, furnish those specific proprietary products. Where more than one manufacturer is specified, the Contractor has the option as to which manufacturer's products are to be used.

Where manufacturers are listed as acceptable for specific proprietary products but precise identification by model, series or trade name is not specified, submit detailed product information for such products for Architect's acceptance prior to ordering. Include specific requirements for modifications to other construction, as specified for substitutions, including power and utility requirements, characteristics, capacities and locations.

See Section 01078 regarding "options".

When terms "or equal", "equal to", "or approved equivalent" and other similar terms are used, provide only the specific product or products specified or approved by written Addendum.

Do not furnish products of manufacturers not specified or not approved in writing except where such products have been specified solely by reference standards. Substitute products proposed must be equivalent in quality, performance and appearance and such equivalence is solely the judgment of the Architect. There is no obligation for the Architect to prove non-equivalence.

Approved substitutions may, because of different size, weight, configuration, power requirements, utility connections or other characteristics, require modifications to other elements of the Work. If such substitutions are used, all such modifications to other elements of the work must be shown by shop drawings or other submittals as appropriate, and approved. The cost of such modifications are solely the Contractor's.

Mechanical and electrical equipment design and its space requirements are based on the first named item of the section in which specified or that scheduled on the drawings. If other than the first named or scheduled item listed for use are intended to be furnished, the above requirements for substitutions will apply.

Compatibility of Options:

Compatibility of products is a basic requirement of product selection. When the Contractor is given the option of selecting between two or more products for use on the project, the product selected must be compatible with other products previously selected, even if the products previously selected were also Contractor options. The complete compatibility between the various choices available to the Contractor is not assured by the various requirements of the Contract Documents, but must be provided by the Contractor.

1.6 GENERAL PRODUCT REQUIREMENTS

Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation. Provide products complete with accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
It is the responsibility of the Contractor and their Installers, as experts, to notify the Architect of any specified product that to their knowledge will not meet the requirements or is unsuited to the application indicated or specified.

1.7 SUBSTITUTIONS:

Basis:

After execution of the Contract, the Owner and the Architect will consider substitutions of products in place of those specified or approved only if the specified product or products, through no fault of the Contractor or their Subcontractors, cannot be delivered in time to meet the construction schedule or is no longer available.

Procedure:

Make written request for the substitution documenting fully the above reason. Include complete data on the proposed substitution substantiating compliance with the Contract Documents including product identification and description, performance and test data, references and samples where applicable, and an itemized comparison of the proposed substitution with the products specified or otherwise approved, with data relating to Contract time schedule, design and artistic effect where applicable, and its relationship to separate contracts.

Accompany the request by accurate installed cost data on the proposed substitution in comparison with the product specified.

Consideration:

Making such requests for substitutions is a representation by the Contractor that:

The Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified and will carry the same warranty;

The cost data are complete and include all related costs under this Contract but excludes costs under separate contracts and excludes Architect's re-design costs, and the Contractor waives all claims for additional costs related to the substitution which subsequently become apparent;

The Contractor will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.

When approved by the Owner and Architect, such substitution will be documented by Change Order modifying the Specifications. The Contract Sum will be changed only if the substitution results in a cost savings to the Owner.

PART 2 – PRODUCTS

The product meets and is consistent with UC Denver Guidelines and Design Standards.

PART 3 - EXECUTION

(Not applicable)
END OF SECTION
SECTION 01701

CONTRACT CLOSEOUT PROCEDURE

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 sections, apply to work of this section. The Contract, General, and Supplemental Conditions supersede any contradictory language in Section 01701.

1.1 SUMMARY

Section Includes:

Administrative and procedural requirements for project closeout, including but not limited to:

- Inspection procedures
- Project record document submittal
- Operating and maintenance manual submittal
- Submittal of warranties.

Specific requirements for individual units of work are specified in sections of Divisions 2 through 16.

Contractor's responsibility is to complete the project in accordance with the Contract Documents and to enforce their requirements on their employees, suppliers and Subcontractors.

Related Sections:

General Conditions and Special Supplementary General Conditions
Section 01710 Final Cleaning
Section 01720 Project Record Documents
Section 01730 Operating and Maintenance Data
Section 01740 Warranties and Bonds

Time of Closeout:

Time of closeout is directly related to "Completion", and it therefore may be either a single time period for entire work or a series of time periods for individual parts of the work which have been certified as complete at different dates.

1.2 COMPLETION (see General Conditions) or Contract Articles

Preliminary Procedures:

Contractor will file a written Notice with the Architect of their claim for completion in accordance with the General Conditions.

In the Application for Payment that coincides with, or first follows the date Completion is claimed, show 100% completion for the portion of the Work claimed as complete. Include supporting documentation for completion as indicated in the Contract Document. If 100%
completion cannot be shown, include list of incomplete items, the value of incomplete construction, and reasons for the Work being incomplete.

Submit statement showing accounting of changes to the Contract Sum.

Advise Owner’s Project Manager of pending insurance change-over requirements.

Submit specific warranties, final certifications and similar documents.

Obtain and submit releases enabling Owner unrestricted use of the Work and access to services and utilities, including occupancy permits, operating certificates, and similar releases.

Submit record drawings, maintenance manuals, and similar final record information. Refer to Sections 01720 and 01730.

Deliver tools, spare parts, extra stocks of materials, and similar physical items to Owner.

Make final change-over of permanent locks and transmit keys to Owner, and advise Owner's personnel of change-over in security provisions.

Complete start-up and testing of systems, and instructions for Owner's operating/maintenance personnel. Discontinue or change over and remove from project site temporary facilities and services, along with construction tools and facilities, mock-ups, and similar elements.

Complete final cleaning up requirements including touch-up painting.

Touch-up and otherwise repair and restore marred exposed finishes.

In order to act upon the Contractor's Notice of Completion, the Architect, their Engineers (as appropriate), and the Owner, will inspect the Project, provided specified prerequisites are met. If they find it complete, the Owner will prepare the Notice of Acceptance. If they find it incomplete the Architect will advise the Contractor by means of a "punch list" inspection report of items required for completion and acceptance. If Work is not complete, Contractor will be advised of general reasons for this judgment or specific areas of non-compliance with the Contract Documents requiring correction or completion for the Work to be considered complete.

The "punch list" inspection will not be made until Project record documents, test and balance reports and operating and maintenance manuals have been delivered to the Architect and found by it to be complete.

The Contractor will proceed immediately to complete all items and will transmit to the Architect weekly a report of the progress on or completion of each item on the "punch list" and the Contractor's list. Any non-conforming or incomplete work coming to the Architect's attention during this period will be added to the list.

The "punch list" inspection shall contain as one of its items the return of all keys issued by the Owner's Project Manager to facilitate access to the buildings and equipment and for use in completing the contracted work. Final payment by the Owner to the Contractor shall be withheld until all keys are returned and accounted for. Keys not returned and/or declared lost by the Contractor shall be assessed at a fee of $500.00 per key or the cost of replacing the affected locks, whichever is the higher, and the cost shall be deducted from the final payment.

1.3 FINAL ACCEPTANCE (See General Conditions) or Contract Articles
Preliminary Procedures:

Before requesting final inspection for certification of final acceptance and final payment, complete the following:

List known exceptions in the request.

Submit final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

Submit updated final statement, accounting for final additional changes to the Contract Sum.

Submit copy of Architect's final punch list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, endorsed and dated by Architect.

Submit final meter readings for utilities and similar data as of the date of Substantial Completion or when Owner took possession of and responsibility for corresponding elements of the work.

Submit consent of surety to final payment.

Submit final liquidated damages settlement statement.

Submit evidence of final, continuing insurance coverage complying with insurance requirements.

Final Inspection:

The Architect and Owner will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Owner.

Upon completion of this inspection, the Owner will prepare a Notice of Acceptance, or the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

If necessary, inspection will be repeated.

Reinspections:

Should Architect be required to perform more than one final inspection because of failure of Work to comply with original certifications of Contractor, Owner will compensate Architect for additional services, and deduct amount paid from final payment to Contractor.

1.4 CLOSEOUT DOCUMENTS

In order to complete the Project, provide the following documents:

Project Record Documents as set forth in General and Supplementary Conditions and Section 01720.

Operating and Maintenance Manuals for Equipment, Systems and Mechanical and Electrical Systems as specified in Sections 01730 and Sections of Division 2 through 16.

Test and Balance Reports for the Mechanical Systems as specified in Division 15.

Printed Warranties and instructions for use or maintenance as specified in the appropriate sections.

Parts and maintenance materials as specified in the appropriate sections.

1.5 START UP AND INSTRUCTIONS

Refer to Section 01730.

1.6 REPLACEMENT MATERIALS

Assemble and deliver to Owner all specified extra or replacement materials as specified in Sections of Division 2 through 16. Accompany with written list in triplicate itemizing each material, pattern, color; quantity and specification section. Obtain Owner's signature on list acknowledging receipt of materials and transmit signed copy to Architect.

1.7 POST-CONSTRUCTION INSPECTION

Prior to expiration of one year from date of final acceptance, the Owner, Contractor, and Architect will inspect project to determine whether corrective work is required. Contractor will be notified in writing of all deficiencies. Corrective work must start on noted deficiencies within 10 days of receipt of notification to Contractor.

One inspection will be made approximately six months after final acceptance and another inspection will be made approximately eleven months after final inspection.

1.8 MISCELLANEOUS

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 and turned over to the Owner.

1.9 WARRANTIES

The Contractor and each Subcontractor shall remedy any defects due to faulty materials or workmanship and pay for any damage to other work resulting therefrom, which shall appear in their work within a period of one year from the date of Notice of Acceptance and in accordance with the terms of any special warranties provided in the contract. The Owner shall give notice of observed defects with reasonable promptness.

Upon completion of their work, the Contractor shall deliver to the Architect/Engineer in duplicate, a written warranty based on the provision of this Article properly signed and notarized. Warranty shall be addressed to the Owner.
PART 2 - PRODUCTS
(Not applicable)

PART 3 - EXECUTION
(Not applicable)

END OF SECTION
SECTION 01710
CLEANING

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

- Procedural requirements to perform final cleaning. Refer to Section 01561 for cleaning during construction.
- Pollution Control: Conduct clean-up and disposal operations to comply with applicable anti-pollution laws and local ordinances.

PART 2 - PRODUCTS

2.0 CLEANING MATERIALS

Use only cleaning materials and methods recommended by manufacturer of surface to be cleaned and by the manufacturer of the cleaning materials and low V.O.C. and environmental friendly.

Use no sweeping compounds on concrete floors that will leave residue affecting finish flooring materials.

PART 3 - EXECUTION

3.0 FINAL CLEANING

Perform final cleaning just prior to final completion inspection.

Use experienced workers, or professional cleaners for final cleaning.

Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program.

Remove labels which are not required as permanent labels.

Remove grease, dust, dirt, stains, films, fingerprints, and other noticeable distracting substances, from interior and exterior surfaces.

Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring material. Replace chipped or broken glass and other damaged transparent materials.

Except as otherwise indicated; avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.
Wipe surfaces of mechanical and electrical equipment clean, including equipment in addition to that specified in sections of Division 15 and 16; remove excess lubrication and other substances.

Remove debris and surface dust from limited-access spaces including roofs, plenums, shafts, trenches, equipment vaults, manholes, attic and similar spaces.


Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.

Repair, patch and touch-up marred surfaces to match adjacent finishes.

Broom clean paved surfaces; rake clean other surfaces of grounds.

Clean food service equipment to a condition of sanitation ready and acceptable for intended food service use, by food service equipment Installer.

Clean light fixtures and lamps so as to function with full efficiency, by electrical Installer.

Replace air supply unit filters if units were operated during construction, by mechanical Installer.

Clean ducts, blowers, and coils if air supply units were operated without filters during construction, by mechanical Installer.

Maintain cleaning until the building, or portion thereof, is occupied or accepted by the Owner.

END OF SECTION
SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

- The recording, maintenance, preparation and submittal of Project Record Documents.

1.2 DOCUMENTS

General:

- Store Documents in temporary field office apart from documents used for construction and maintain documents in clean, dry, legible condition. Do not use record documents for construction purposes. Label each document "PROJECT RECORD" in 1" or larger printed letters.

- Make documents available at all times for inspection by Architect, their Professional Consultants, and Owner.

Record Drawings:

- Maintain a clean, undamaged set of blue or black line white prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

- Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.

- Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.

- Note related Change Order numbers where applicable.

- Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

- Record drawing information with opaque lines and symbols conforming to Contract Drawings. Note where positions of elements have been changed. Follow methods directed by Architect.

- Keep Record Documents current. Update at least weekly.
Do not permanently conceal any work, including lay-in ceiling panels, until required information has been recorded.

Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements.

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, cleanouts, other items requiring access or maintenance. Upon completion of the work, submit record drawings to the Architect for the as-building & copy directly to the owner.

Record Specifications:

Maintain one complete copy of the Project Manual, including addenda, and one copy of all other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

Upon completion of the Work, submit record Specifications to the Architect for the Owner's records.

Record Product Data:

Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendation. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

Upon completion of the mark-up, submit complete set of record Product Data to the Architect for the Owner's records.

Maintain product listing furnished under Section 01630 and record any changes made to it, either brand, model, Subcontractor or Installer so that final listing will accurately reflect the materials, equipment and systems incorporated in the Work.

Record Sample Submitted:

Immediately prior to the date or dates of Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

Miscellaneous Record Submittals:

Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or
dates of Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

Include manufacturer's certifications, field test records, copies of permits, licenses, certifications, inspection reports, releases, notices, receipts for fee payments, and similar documents.

1.3 SUBMITTAL

Complete this work and submit as specified in Section 01701.

Submit marked-up drawing prints and final product listing as part of Completion Documents and two copies to UC Denver Project Manager.

Submit revised and corrected mark-ups if initial submittal is unsatisfactory as part of Final Completion Documents.

Deliver record documents to Architect including all items listed above under "Documents" and a copy of the complete set of record documents to Owner’s Project Manager.

Accompany submittals with transmittal letter, in duplicate, containing:

- Date
- Project title and number
- Contractor's name and address
- Title and number of each record document
- Certificate that each document as submitted is complete and accurate
- Signature of Contractor, or their authorized representative.

PART 2 - PRODUCTS

(Not applicable)

PART 3 - EXECUTION

(Not applicable)

END OF SECTION
SECTION 01730
OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

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

1.1 SUMMARY

Section Includes:

Administrative and procedural requirements for Operating and Maintenance Manuals for materials and finishes, mechanical, electrical and other equipment or systems.

Instructing Owner's personnel in maintenance of products and in operation of equipment and systems.

Related Sections:

Section 01300 Submittals
Section 01701 Contract Closeout Procedures
Section 01720 Project Record Documents

1.2 FORM OF SUBMITTALS

Prepare data in form of an instructional manual for use by Owner's personnel.

Format:

Size: 8.5" x 11", 20 lb. minimum weight white paper for typed pages, either manufacturer's printed data, or neatly typewritten.

Drawings: Provide reinforced punched binder tab, bind in with text. Fold larger drawings to size of text pages.

Provide indexed tabs and fly-leaf for each separate product, or each piece of operating equipment. Include typed description of product, and major component parts of equipment.

Cover:

Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS." List:

Title of Project
Identity of separate structures as applicable
Identity of general subject matter covered in the manual.

Binders:
Commercial quality three-ring binders with durable and cleanable plastic covers, 1" minimum, 2" maximum ring size.

When multiple binders are used, correlate the data into related consistent groupings

1.3 CONTENT OF MANUALS

Neatly typewritten table of contents for each volume, arranged in systematic order.

Contractor, name of responsible principal, address and telephone number.

A list of each product required to be included, indexed to content of the volume.

List, with each product, name, address and telephone number of:

- Subcontractor or installer
- Maintenance contractor, as appropriate
- Identify area of responsibility of each
- Local source of supply for parts and replacement.

Identify each product by product name and other identifying symbols as set forth in Contract Documents.

Product Data:

Include only those sheets which are pertinent to the specific product. Annotate each sheet to clearly identify specific product or part installed, data applicable to installation.

Drawings:

Supplement product data with drawings as necessary to clearly illustrate relations of component parts of equipment or systems and control and flow diagrams.

Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.

Written Text:

As required to supplement product data for the particular installation organized into consistent format under separate headings for different procedures. Provide logical sequence of instructions for each procedure.

Other Data:

Copy of each warranty, bond and service contract issued.

Provide information sheet for Owner's personnel, covering proper procedures in event of failure and instances which might affect validity of warranties or bonds.

1.4 MANUAL FOR MATERIALS AND FINISHES

Submit two (2) copies of complete manual in final form covering maintenance and cleaning procedures for materials specified in sections of Division 2 through 16. Include:
Catalog number, material, composition;
Color and texture designations;
Information required for re-ordering special manufactured products;
Manufacturer's recommendations for types of cleaning agents and methods;
Cautions against cleaning agents and methods which are detrimental to product;
Recommended schedule for cleaning and maintenance.

Submit two (2) copies of manual covering moisture protection and weather exposed products.

Provide manufacturer's data, giving full information on products, applicable standards, chemical
composition and details of installation.

Provide instructions for inspection, maintenance and repair.

1.5 MANUALS FOR EQUIPMENT AND SYSTEMS

Provide complete information for products specified in:

- Heating, ventilating and air-conditioning equipment and systems;
- Plumbing equipment and systems;
- Special piping systems and equipment;
- Electrical distribution system;
- Standby generator system;
- Communications systems;
- Fire alarm and detection system;
- Underground sprinkler system;
- Electrically operated doors and closures;
- Automatic entrances;
- Food service equipment;
- Elevators;
- Other equipment, special construction, conveying systems where specified in the individual
sections.

Submit manuals with complete data as required, including the following as applicable.

Description of Unit and Component Parts:

- Function, normal operating characteristics, and limiting conditions; performance curves,
  engineering data and tests; complete nomenclature and commercial number of replaceable parts.

Operating Procedures:

- Start-up, break-in, routine and normal operating instructions; regulation, control, stopping, shut-
down and emergency instructions; summer and winter operating instructions; special operating
instructions.

Maintenance Procedures:

- Include routine operations, guide to "trouble-shooting", disassembly, repair and reassembly,
alignment, adjusting and checking.

- Include lubrication schedule, lubricants required and filter cleaning or replacement schedule.
Instructions:

Submit manufacturer's printed operating and maintenance instructions with description of sequence of operation, original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance covering predicted life of parts subject to wear and items recommended to be stocked as spare parts.

Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel or when specified in respective sections.

Diagrams, Charts:

Submit as-installed control diagrams by controls manufacturer, charts of valve tag numbers, with location and function of each valve, content for each electric and electronic system, as appropriate, circuit directories of panelboards, electrical service and distribution, controls, and communications systems with as-installed color coded wiring diagrams.

1.6 SUBMITTAL SCHEDULE

Submit one copy of completed data in final form fifteen (15) days prior to completion inspection. Copy will be returned after completion inspection with comments.

Submit two copies in final corrected form ten (10) days prior to final inspection or acceptance.

1.7 START UP AND INSTRUCTIONS

Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems.

Test and start up all systems as specified in the appropriate sections. Where so specified, arrange for each Installer to provide instructions to the Owner's personnel in the operations of such systems. Notify both the Architect and the Owner, in writing, at least seven (7) days in advance of such start-ups, tests, and demonstrations.

Include instructions by manufacturer's representatives when so specified or where installers are not expert in the required procedures. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, cleaning and similar procedures and facilities.

For operational equipment, demonstrate start-up, shut-down, seasonal changeovers, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, and similar operations. Review maintenance and operations in relation with applicable warranties, agreements to maintain, bonds, and similar continuing commitments.

1.8 FRAMED OPERATING AND MAINTENANCE INSTRUCTIONS

All mechanically and electrically operated equipment and controls shall be provided with legible and complete wiring diagrams, schematics, operating instructions, and pertinent preventative maintenance instructions in a sturdy frame with clear glass or plastic cover. Utilize non-fading, permanent media.

Frames shall be located in the same room or service enclosure as the equipment, or in the nearest mechanical or electrical room.
Submit proposed instructions to Architect for review and acceptance prior to installation.

PART 2 - PRODUCTS

(Not applicable)

PART 3 - EXECUTION

(Not applicable)

END OF SECTION
SECTION 01740
WARRANTIES AND BONDS

PART 1 - GENERAL

1.0 RELATED DOCUMENTS

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Sections, apply to this section.

1.1 SUMMARY

Section Includes:

General administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.

Related Sections:

Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.

Section 01701 Contract Closeout Procedure.

Specific requirements for warranties for Work, products and installations: Individual sections of Divisions 2 through 16.

Certifications and other commitments and agreements for continuing services to Owner: Applicable portions of Contract Documents.

Disclaimers and Limitations:

Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and Subcontractors required to countersign special warranties with the Contractor.

1.2 DEFINITIONS

Standard Product Warranties: Preprinted written warranties published by individual manufacturers for particular products and specifically endorsed by the manufacturer to the Owner.

Special Warranties: Written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.3 WARRANTY REQUIREMENTS

Related Damages and Losses:

When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.

Reinstatement of Warranty:
When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

Replacement Cost:

Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

Owner's Recourse:

Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.4 SUBMITTALS

Submit written warranties to the Architect prior to advertisement of the Notice of Contractor's Settlement. If the Notice of Acceptance designates a commencement date for warranties other than the date of Notice of Acceptance for the Work, or a designated portion of the Work, submit written warranties upon request of the Architect.

When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Architect within fifteen (15) days of completion of that designated portion of the Work.

When a special warranty is required to be executed by the Contractor, or the Contractor and a Subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Architect for approval prior to final execution.

Refer to individual sections of Divisions 2 through 16 for specific content requirements, and particular requirements for submittal of special warranties.

Form of Submittal:

Prior to advertisement of Notice of Contractor's Settlement, compile two (2) copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, Subcontractor, supplier or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

Bind warranties and bonds in heavy duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8.5" by 11" paper.

WARRANTIES AND BONDS 01740-2
Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the Installer.

Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS", the Project title or name, and the name of the Contractor.

When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS

(Not applicable)

PART 3 - EXECUTION

(Not applicable)

END OF SECTION