

## **CONSTRUCTION STANDARDS**

Note: The buildings on the UCCS campus are divided into two categories: General Fund and Auxiliaries. General Fund Buildings include academic and administrative functions. Auxiliary buildings include residence halls, athletic, and dining facilities. In some cases, construction standards differ depending on the building category. Confirm building category with Facilities Services Project Manager.

### **DIVISION 2 – EXISTING CONDITIONS**

- Subsurface Exploration
- Demolition and Structure Removal
- Selective Demolition
- Asbestos Removal
- Site Clearing
- Soil Preparation

#### **A. SUBSURFACE EXPLORATION**

Section Includes:

1. Soil and Foundation Investigation
2. Interpretation and Use
3. Archaeological Survey Procedure
4. Examination of Site

#### **1. GENERAL**

##### **A. Soil and Foundation Investigation**

1. Soils Engineer will be selected and paid directly by the University of Colorado, Colorado Springs
2. A copy of the Soils Report may be included in the Project Manual, placed under "Information Available to Bidders", and not part of the Contract Documents.

#### **2. DESIGN REQUIREMENTS**

- A. Exploratory borings will be spaced in order to obtain a comprehensive picture of the subsurface soil conditions.
- B. Erratic soil conditions may occur between test holes. If such conditions are found during construction operations, the Architect/Engineer and the University Project Manager shall be notified immediately.

#### **3. ARCHAEOLOGICAL SURVEY**

- A. The University reserves the right to require an Archaeological Survey under the auspices of the Colorado State Historical Society.
- B. Procedure During Construction

1. If any relic, artifact, or object is encountered that may be suspected of being historic or pre-historic value: STOP EXCAVATION OPERATIONS IMMEDIATELY AND NOTIFY THE UNIVERSITY PROJECT MANAGER.
  2. The Project Manager will, in turn, notify the State Archaeological and Historical Department, who will conduct a Survey to determine if excavation findings may yield information of historic or pre-historic significance and accordingly become eligible for the National Register.
  3. In any event, the University may further investigate and research the findings.
  4. Construction delay or other costs relating to the Archaeological Survey will be processed in conformance with the Contract Documents.
- C. The survey may occur prior, during or after the earthwork operations.

#### **4. PROJECT CONDITIONS**

- A. The Contractor shall examine the site before submitting bid to determine for himself the character of materials to be encountered and all conditions which will effect work, time and cost.
- B. Benchmarks, monuments, and other reference points, shall be provided and maintained by the Contractor.

#### **B. DEMOLITION AND STRUCTURE REMOVAL**

Section Includes:

- Hazardous Material Abatement Procedures
- Demolition of buildings or portions of buildings
- Removal of materials from the site
- Subgrade removal including:
  - Foundations
  - Basement floor slab demolition
  - First floor slab demolition
  - Underground tanks and piping
- Disconnection, capping and identification of utilities
- All salvage shall become the responsibility of the Contractor to dispose of offsite, unless specified otherwise by the Owner.

Related Sections:

- Selective Demolition
- Asbestos Removal

#### **1. SUBMITTALS**

- A. Submit a construction waste management plan including demolition, removal procedures and schedule. LEED – Waste Management Plan is required.
- B. Submit record documents. Construction Waste Management

Submit waste reduction progress reports with applications for payment. Include the following in the reports:

1. Material Category/Type
2. Where waste was generated
3. Total quantity of waste in tons
4. Total quantity salvaged, in tons
5. Total quantity recycled, in tons
6. Total quantity recovered (salvaged + recycled), in tons
7. Total quantity recovered as a percentage of total waste

## **2. QUALITY ASSURANCE**

- A. Permits and fees shall be obtained and paid for by the Contractor.
- B. Coordinate with regulating authorities and University Agencies to locate:
  1. Electric
  2. Gas
  3. Water
  4. Sewer (Sanitary and Storm)
  5. Telecommunications
  6. Steam
  7. Steam condensate
  8. Chilled water
  9. Compressed air
  10. Cable
  11. Building Controls

## **3. PROJECT SITE CONDITIONS**

- A. Existing Conditions
  1. Condition of the Structures:
    - a. Buildings to be demolished will be vacated and discontinued in use prior to the start of the work.
    - b. The Owner assumes no responsibility for the actual condition of the structures to be demolished.
    - c. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable. Variations within the structures may occur by the Owner's salvage and asbestos abatement operations prior to the start of demolition. A copy of the environmental site assessment will be available for inspection at the UCCS Project Manager's office.
- B. Environmental Conditions
  1. Pollution Controls
    - a. Comply with all governing regulations.
    - b. Return areas to condition existing prior to the start of the work, unless directed otherwise in Contract Documents.

- c. Keep dust from entering existing facilities. Comply with Colorado Department of Health requirements regarding debris control. Jet and video storm sewers where debris may have accumulated.
    - d. Coordinate noisy operations with Owner such that nearby functioning facilities are disturbed minimally.
  - 2. Explosives will not be permitted.
  - 3. Traffic
    - a. Ensure minimum interference with streets, pedestrian ways and adjacent facilities.
    - b. Provide alternate routes around closed or obstructed vehicular and pedestrian ways as routes required by the Owner's Representative.
    - c. Ensure the safe passage of vehicular and pedestrian traffic around the site.
  - 4. Utilities
    - a. Before disconnecting, removing, plugging or abandoning any existing utilities serving the building:
      - i. Notify the Owners Representative, applicable utility companies, and local authorities having jurisdiction.
      - ii. Cut off and cap utilities at the mains on the property or in the street as required by the Owner and responsible utility company.
      - iii. Remove, cut off and plug, or cap all utilities within the existing building areas to be demolished, except those designated to remain.
    - b. Locate and protect existing utilities.

#### **4. SALVAGE**

- A. The Owner reserves first salvage rights. The Owner shall provide a schedule of items to be salvaged and clearly indicate which items are to be retained. Contractor will clearly identify and tag each salvageable item.
- B. The Contractor shall notify the Owner for review of material to be stored or selected for salvage.
- C. Items of salvageable value to the Contractor may be removed from the structure as the work progress, if such items are not claimed by the Owner. Proper documentation must be completed before items are removed from the project site to qualify for LEED credit.
- D. Transport salvaged items from the site as they are removed to a location determined by the Owners Representative. All items of salvageable value must be salvaged to qualify for LEED credit.

#### **5. RECYCLE**

- A. LEED - MRc2: Construction Waste Management
  - 1. All demolition and land clearing debris that is recyclable must be recycled.
  - 2. Documentation must be kept of all recycled material in order to fill out waste reduction progress reports.
  - 3. Recyclable materials shall be taken to a local recycling facility. Waste reduction progress reports shall be completed for all material.

4. If Owner and Contractor do not want salvageable items, they shall be donated and waste reduction progress reports shall be completed for those items.

## **6. DISPOSAL**

- A. Campus dumpsters or other trash receptacles shall not be used for disposal of demolition debris. Remove from the site all debris, rubbish and other materials resulting from demolition operations. Transport all non-recyclable or non-salvageable materials removed from demolished structures and dispose of in a legal manner off the site. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered. Burning of removed materials from demolished structures will not be permitted on the site.

## **7. PREPARATION**

- A. Prevent movement or settlement of adjacent structures, and utilities. Provide bracing and shoring as necessary.
- B. Protect existing landscaping materials, appurtenances, utilities, and structures which are not to be demolished.
- C. Mark location of disconnected utilities. Identify utilities and indicate capping locations on Project Record Documents. Provide locate fixes/points in the field prior to disconnection.

## **8. BUILDING DEMOLITION**

- A. Demolish designated structures and remove from the site.

## **9. BELOW-GRADE DEMOLITION**

- A. Demolish foundation walls, utility lines, manholes and related structures to the following depths:
  1. General Site: Remove to 3 feet below existing grade unless noted otherwise.
  2. Structural areas within 5 feet either side of the foundation walls and column bearing pads: Remove completely unless noted otherwise.
  3. Utility Trenches: Where existing below ground structures conflict with new construction, the obstructions shall be completely removed and backfilled with structural fill.
- B. Demolish concrete basement and other slabs on grade into pieces manageable for disposal. Basements and slabs are not required to be removed if location is below the elevations described above, and do not conflict with subgrade utilities.
- C. Pump out buried tanks located within demolition area. Comply with EPA and State of Colorado requirements regarding equipment and disposal of tank contents. Remove underground tanks, components, and piping from site where tanks occur within 5' of building lines. Fill abandoned tanks with clean sand or lean concrete where tanks occur outside of 5' of building lines. Remove any contaminated soil from around tanks and replace with material acceptable to the Owner.
- D. Completely fill below-grade areas and voids resulting from the demolition of structures.

## **C. SELECTIVE DEMOLITION**

Section Includes:

- Types of Selective Demolition Work:
  - Portions of building structure as required to accommodate new construction.
  - Removal of interior partitions.
  - Removal of doors and frames.
  - Removal of built-in casework.
  - Removal and protection of existing material to be reused. Fixtures and equipment items indicated as “salvage” or for “reuse”.

Related Sections:

- Hazardous Material Procedures
- Demolition and structure Removal
- Asbestos Removal

### **1. SUBMITTALS**

- A. Submit schedule indicating proposed methods and sequence of operations for selective demolition work. Include selective demolition work in the construction waste management plan. (LEED MRc2: Construction Waste Management)

### **2. JOB CONDITIONS**

#### A. Occupancy

- 3. University personnel will be continuously occupying areas of the building immediately adjacent to areas of selective demolition. Verify with UCCS Project Manager whether building will be occupied or vacated during expected work activities.
- 4. Conduct selective demolition work in manner that will minimize the need for disruption of normal operations if building remains occupied.
- 5. Provide minimum of 72 hours advance notice of demolition activities and utility outages. Outages of services require that a 10 day notice be given to the UCCS Project Manager to coordinate with users.

#### B. Condition of Structures

- 1. The University assumes no responsibility for actual condition of items or structures to be demolished.
- 2. Conditions existing at time of commencement of contract will be maintained insofar as practical.

#### C. Protection of Persons and Property

- 1. Provide temporary barricades, traffic control, and other forms of protection as required. Contractor to comply fully with OSHA requirements.

D. Traffic

1. Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Clean-up is required daily as work progresses.

E. Utility Services

1. Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.
2. Coordinate utility outages with UCCS Project Manager.

F. Environmental Controls

1. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with the Department of Health requirements regarding debris control.
2. Keep dust and dirt from migrating to occupied building areas.

**3. SALVAGE**

A. The Owner reserves first salvage rights including:

1. Items of historic or archaeological significance or value.
2. Construction material and products.
3. Mechanical, electrical equipment and components.
4. Where practical, architect to re-use materials salvaged.

B. The Contractor shall notify the Owner to review the materials to be stored or selected for salvage.

C. Items indicated to be removed but of salvageable value to Contractor may be removed in a timely manner from structure as work progresses, if such items are not claimed by the Owner.

D. LEED MRc2: Construction Waste Management: Documentation must be completed before items are removed from the project site in order to complete the waste reduction progress reports.

E. Transport salvaged items from site as they are removed.

F. Storage or sale of removed items on site will not be permitted.

G. LEED MRc2: Construction Waste Management: If items are salvageable, but are of no value to the Owner or Contractor, items must be donated. Waste reduction progress reports must be completed.

#### **4. RECYCLE**

- A. All selective demolition debris that is recyclable must be recycled.
- B. LEED MRc2: Construction Waste Management: Waste reduction progress reports must be completed for all recycled material.

#### **5. DISPOSAL**

- A. Campus dumpsters or other trash receptacles shall not be used for disposal of demolition debris. Remove from the site all debris, rubbish and other materials resulting from demolition operations. Transport all non-recyclable or non-salvageable materials removed from demolished structures and dispose of in a legal manner off the site. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered. Burning of removed materials from selective demolition will not be permitted on the site.

#### **6. PREPARATION**

- A. Provide interior and exterior shoring, bracing, or support, as required.
- B. Cover and protect furniture, equipment and fixtures, if not removed by the Owner.
- C. Erect and maintain dust-proof and weatherproof partitions and closures as required.
- D. Locate, identify, stub-off and disconnect utility services that are indicated to be removed.
- E. Request inspection by the Facilities Department and applicable utility companies:
  - 1. When utilities are uncovered.
  - 2. Prior to covering-up or concealing utilities.

#### **7. DEMOLITION**

- A. Perform selective demolition work in a systematic manner.
  - 1. Demolish concrete and masonry in small, manageable sections. Do not overload structure with debris. Cut concrete and masonry using power-driven masonry saw or hand tools; do not use power-driven impact tools in buildings.
  - 2. Locate demolition equipment throughout structure to avoid imposing excessive loads on supporting walls, floors or framing.
  - 3. Construct chutes as required to conduct debris safely to grade disposal areas. Comply with Environmental Health and Safety and Colorado Department of Health dust control and safety requirements.
  - 4. Do not cut or alter any structural member without authorization of the Architect.



**D. ASBESTOS REMOVAL**

Section Includes:

- Procedures regarding existing asbestos.

Related Sections:

- Hazardous Material Procedures
- Demolition and Structure Removal
- Selective Demolition

**1. PROJECT CONDITIONS**

- A. In the event the Contractor encounters material reasonably believed to be asbestos:
1. Stop work immediately in affected area.
  2. Report the condition to the Owners Representative in writing.
  3. Report the condition to the Architect in writing.
  4. Resume work only when abatement work or a clean inspection/test has been completed.

**E. SITE CLEARING**

Section Includes:

- Stripping and storage of existing topsoil.
- Removal of trees or other vegetation.
- Removal of surface improvements.

Related Sections:

- Earthwork
- Soil Preparation
- Demolition and Structure Removal

**1. PROJECT CONDITIONS**

- A. Protect plant growth and existing improvements to remain.
- B. Provide protection such that equipment and stored materials will be kept outside drip line of trees.
- C. Restore damaged improvements to their original condition.
- D. Jet and video storm sewers where debris may have accumulated.
- E. Remove and store items to be salvaged.

**2. TOPSOIL EXCAVATION AND STOCKPILING**

- A. Strip topsoil from designated areas and areas of building construction and paving to whatever depths encountered in a manner to prevent intermingling with the underlying subsoil or other objectionable material. Topsoil is defined as loose friable loam reasonably free of admixtures of subsoil, refuse, stumps, soil sterilants, rocks, brush, weeds, and all material 2" in diameter and larger and detrimental to proper development of vegetative growth.
- B. Finely shred all vegetation down to ground line and leave on surface.
- C. Where trees are indicated to be left standing, stop topsoil stripping a sufficient distance to prevent damage to the main root system, but no closer than the drip-line of the tree.
- D. Stockpile topsoil in storage piles at a designated location on Campus. Construct storage piles to freely drain surface water. Cover storage piles if required to prevent windblown dust. Comply with environmental regulating authorities regarding control. Should stockpiled topsoil disappear, Contractor will be required to replace missing topsoil with topsoil meeting specified requirements. Dispose of extra stockpiled topsoil off the site or as directed by the Owner. Architect shall indicate material stockpiling areas on the drawings. If stipulated area is insufficient for project requirements, the Contractor shall include in the Base Bid costs for hauling to an appropriate off-campus location.
- E. Salvage all boulders larger than 12 inches in diameter. Stockpile in area specified by Owner.

**F. SOIL PREPARATION**

Section Includes:

- Ripping
- Fertilizer
- Soil Conditioner
- Fine Grading

Related Sections:

- Irrigation
- Seeding
- Planting

**1. SUBMITTALS**

- A. State, federal and other inspection certificates for materials showing source or origin shall be submitted prior to application or acceptance of material.

**B. DELIVERY, STORAGE AND HANDLING**

1. Fertilizer: Deliver inorganic or chemical fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, trademark and conformance to state law, bearing name and warranty of producer.
2. Notify Owner of delivery schedule in advance so material can be inspected upon arrival at the project site. Immediately remove unacceptable material from the project site.

C. PROJECT/SITE CONDITIONS

1. Do not perform work when climate and existing site conditions will not provide satisfactory results.
2. Vehicular accessibility on site shall be as directed by the Owners Representative. Repair damage to prepared ground and surface caused by vehicular movement during work under this section to original condition at no additional cost to the Owner. All damage incurred outside of construction limits due to vehicle or access traffic will be repaired to the same standards listed below. Coordinate access with the Owners Representative.

D. SOIL MATERIALS

1. Topsoil – Remove existing top 12" of soil from the site. Replace soil with 12" of new approved top soil in all proposed landscape areas including landscape beds.
2. Soil Conditioner – A-1 Organics Pro Gro II Organic Compost<sup>6</sup> or approved equal to be used for all areas requiring soil amendment. Alternates to be approved by the Campus Outdoor Services Supervisor.
3. First Application Fertilizer to all landscape areas – Apply Richlawn 5-3-2 or approved equal at a rate of 1 lb of Nitrogen/1000 sq. ft. tilled to a depth of 6".

E. EXAMINATION

1. Verify that existing site conditions are as specified and indicated before beginning work under this Section.
2. Grades – Inspect to verify rough grading is within +0.1 foot of grades indicated and specified.
3. Damaged Earth – Inspect to verify that earth rendered unfit to receive planting due to concrete, water, mortar, limewater or any other contaminant dumped on it has been removed and replaced with clean earth from a source approved by the Campus Outdoor Services Supervisor.
4. Unsatisfactory Conditions – Report in writing to General Contractor with copy to Owner.
5. Acceptance – Beginning of installation means acceptance of existing conditions by installer.

F. PREPARATION

1. Protection
  - Contractor shall locate sewer, water, irrigation, gas, electric, phone and other pipelines, conduits or utilities prior to commencing work.

- Contractor shall be responsible for proper repair to landscape, utilities, walls, pavements and other existing site improvements damaged by operations under this Section.
2. Weed Control – Remove weeds by removing top 12” of existing soil. Do not remove soil within tree/plant protection zones. Take care to insure that removal of soil and weeds is done in a fashion as not to contaminate surrounding soil with existing weeds/weed seed. Use of herbicide in any form must be approved in writing with the Campus Outdoor Services Supervisor.
  3. Surface Grade – Remove weeds, debris, clods and rocks larger than ½”. Dispose of accumulated debris.
  4. Runoff – Take measures and furnish equipment and labor necessary to control the flow, drainage, and accumulation of water. Insure that all water will run off the grades.
  5. Erosion Control – Take measures and furnish equipment and labor necessary to control and prevent soil erosion, blowing soil and accumulation of wind-deposited material on the site throughout duration of work.

#### G. INSTALLATION

1. Soil Amendment – Evenly distribute Pro Gro II and Richlawn 5-3-2 to landscape areas at the following rates:
  - Pro Gro II will be applied at a rate of 4 cu. Yds. Per 1,000 sq. ft. to all sod and seed areas.
  - Richlawn 5-3-2 will be applied at a rate of 1 lb nitrogen/1000 sq. ft. to all sod and seed areas.After applying soil conditioner and fertilizer, thoroughly till area to depth of 6” minimum by plowing, harrowing, or disking until soil is well pulverized and thoroughly mixed.
2. Fine Grading in all Landscape Areas
  - Do fine grading for areas prior to planting.
  - For ground surface areas surrounding buildings to be landscaped, maintain required positive drainage away from buildings.
  - Establish finish grades to within 0.04 foot of grades indicated.
    - Sod Areas – Allow 1.25” for sod.
  - Noxious weeds or parts thereof shall not be present in the surface grade prior to landscaping.
  - Prior to acceptance of grades, hand rake to smooth, even surface free of debris, clods, rocks, and vegetable matter greater than 1/2”.

#### H. INSPECTION

1. Campus Outdoor Services Supervisor and UCCS Project Manager will specify deficiencies to Contractor who shall make satisfactory adjustments and shall notify the Owner for final inspection.

#### I. CLEANING

1. Remove debris and excess materials from site. Clean out drainage inlet structures. Clean paved and finished surfaces soiled as a result of work under this Section.

**J. PROTECTION**

1. Provide and install barriers as required and as directed by Owners Representative to protect completed areas against damage from pedestrian and vehicular traffic until acceptance by Owner. Contractor is not responsible for malicious destruction caused by others.

**G. CONTAMINATED SITE MATERIAL REMEDIATION**

1. Soils determined to be contaminated, but not hazardous, as determined by CDPHE or other regulatory agencies having jurisdiction, shall be handled and disposed of, or both as recommended by the Engineer. The Contractor shall haul this material to a solid waste disposal facility.

**H. WATER REMEDIATION**

1. Groundwater determined to be contaminated, but not hazardous, as determined by CDPHE or other regulatory agencies having jurisdiction, shall be handled and disposed of, or both as recommended by the Engineer. The Contractor shall prepare a dewatering plan proposing at least three types of treatment and/or disposal options of contaminated groundwater as required by applicable statutes and regulations. One of the treatment options shall include permitting and onsite treatment prior to discharge or disposal. The dewatering plan shall be submitted to the Engineer for approval four weeks before dewatering activities begin.

**I. HAZARDOUS WASTE DISPOSAL**

1. Soils and groundwater that are designated or suspected to be hazardous shall be containerized immediately upon excavation or upon discovery. Hazardous material shall be labeled and transported to a permitted treatment, storage and disposal facility or to a hazardous waste disposal facility approved by the Engineer.