

DIVISION 2

SITWORK

## 1.0 BASIC SITE MATERIALS & METHODS

- 1.01 Earthwork may be subject to field observation and testing by a geotechnical engineer.
- 1.02 Information from geotechnical report which belongs in specification shall be explicitly specified, *not called out via cross-reference to geotechnical report.*
- 1.03 Curbs, gutters, driveway pans, and sidewalks at the property lines shall meet the requirements of the City of Golden street standards and specifications Available on the City of Golden Website.
- 1.04 Site furnishing such as benches, ground lighting, trash containers, and directional signs shall be approved by CSM.
1. All such furnishings shall be so located as to not interfere with landscape maintenance or snow plow maneuvering. Benches may be specified to work with each individual design aesthetic, but may not be made of wood. Round tables with fixed seating is preferred.
  2. There shall be a cigarette urn at the exterior of each entry. Wall Mounted Smokers Post:  
  
Under Review with Mines Facilities Management
  3. Trash cans to be:  
  
MFR: Wausau Tile  
Part #: TF1030 25"x25"x47"  
615 lbs 53 Gal.  
[www.wausautile.com](http://www.wausautile.com)  
Black Lid for trash "TRASH" on logo  
Blue Lid for recycling "RECYCLE" on logo  
Finish aggregate to compliment building(s).  
Final selection to be approved by Owner.
  4. Bike racks to be:  
  
MFR: Summit Supply  
2-3/8-inch O.D. Loop Style  
Powder coated - black, #40 pipe  
[www.summitsupplycolo.com](http://www.summitsupplycolo.com)
- 1.05 A freeze-proof and keyed exterior water connection for both hot and cold water adjacent to all paved plazas, building entry walkways, and loading docks.
- 1.06 All exterior walks and building approaches shall have a minimum lighting level of 3 to 5 foot-candles. Lighting fixtures shall match CSM campus lighting design and standards
- 1.07 All exterior ramps and/or stairs plus the first ten feet of sidewalk out from the building entry shall have heat tape snowmelt. CSM should be contacted to inspect and approve heat tape installation and inspect it prior to pouring concrete.
- 1.08 All exterior paving shall be accessible to a 5' blade, garden tractor snowplow. Provide snow storage areas as needed. All paved drives and parking shall have access for snow plowing and snow storage.
- 1.09 There shall be a weatherproof electrical outlet for exterior cleaning at every 200 L.F. of exterior wall with a minimum of one per building face

1.10 Wood mulch to be gorilla hair cedar

1.11 Water Conservation Measures:

- Install rain sensors
- Install ET controllers
- Install a central control system
- Specify hybrid bluegrass types and xeriscape on new construction
- Reduce sod areas and/or convert sod areas to xeriscape
- Eliminate watering between 10 am and 6pm and during high winds

1.12 Mines Legal Department has authorized the campus providing anti-skateboarding attachments to mitigate risk and that signage regarding the attachments is not required

1.13 Minimum Recycling Space for New Construction:

0-5,000 SF: 82 SF  
5,001-15,000 : 125 SF  
15,001-50,000 : 175 SF  
50,001-100,000: 225 SF  
100,001-200,000: 275 SF  
200,000: 500 SF

## 2.0 IRRIGATION SYSTEMS

### 2.01 IRRIGATION SYSTEMS WILL HAVE THE FOLLOWING CHARACTERISTICS:

Irrigation systems supply and power shall be roughed in.

Provide a minimum of two 4" diameter PVC sleeve under every walk or drive to access all landscaped area.

All main and lateral irrigation line will be 2-2" PVC. Utilize PVC in all areas except drip lines unless otherwise noted.

All designs shall be reviewed and approved by CSM prior to installation.

### 2.02 Sprinkler System requirements are as follows:

Provide 1-inch compressed air coupling with ball valve, downstream side of backflow. And close to the sprinkler system valve box.

Piping:

- a. Pressure Supply Line (from point of connection through backflow prevention unit): Type K hard copper.
- b. Pressure Supply Lines (downstream of backflow prevention units): Class 200 PVC BE.
- c. Non-Pressure Lines: Schedule 80 PVC on laterals
- d. PVC Sleeving: Class 160 PVC.
- e. Drip Tubing: Hardie Dura-Pol EHD 1645 ¾" with .050 inch wall thickness.
- f. Emitter Tubing: As recommended by emitter manufacturer.
- g. Copper pipe and fittings:
  1. Copper Pipe: Type K, hard tempered.
  2. Fittings: Wrought copper, solder joint type.
  3. Joints: Soldered with solder, 45% silver, 15% copper, 16% zinc, and 24% cadmium and solids at 1125 \_F and liquids at 1145 \_F.
- h. Brass Pipe and Fittings
  1. Brass pipe: 85% red brass, ANSI Schedule 40 screwed pipe.
  2. Fittings: Medium brass, screwed 125-pound class.
- i. Solvent Weld Pipe: Manufactured from virgin polyvinyl chloride (PVC) compound in accordance with ASTM D2241 and ASTM D1784; cell classification 12454-B, Type 1, Grade 1
- j. Fittings: Standard Wright, Schedule 40, injection molder PVC; complying with ASTM D1784 and D2466, cell classification 12454-B
  1. Threads: Injection molded type (where required).

2. Tees and ells: Side gated.
  3. Threaded Nipples: ASTM D2464, Schedule 80 with molded threads
- k. Flexible Plastic Pipe: Manufactured from virgin polyethylene in accordance with ASTM D2239, with a hydrostatic design stress of 630 psi and designated as PE 2306.
1. Fittings: Manufactured in accordance with ASTM D2609; PVC Type 1 cell classification 12454-B.
  2. Clamps: All stainless steel worm gear screw clamps. Use 2 clamps per joint on 1-1/2 inch and 2 inch fittings.
- l. Identify all pipe with the following indelible markings:
1. Manufacturer's name
  2. Nominal pipe size
  3. Schedule of class
  4. Pressure rating
  5. NSF (National Sanitation Foundation) seal of approval
  6. Date of extrusion
- 2.03 Drip irrigation systems
- a. Drip Tubing: Manufactured of flexible vinyl chloride compound conforming to ASTM D1248, Type 1, Class C, Category 4, P14 and ASTM D3350 for PE 122111C
  - b. Fittings: Type and make recommended by tubing manufacturer.
  - c. Drip Valve Assembly:
    1. Control Valve: 2-way, solenoid pilot operated type made of synthetic, non-corrosive material; diaphragm activated and slow closing. Include freely pivoted seat seal; retained (mounted) without attachment to diaphragm.
    2. Pressure Reducing Valve: Plastic construction
  - d. Emitters: Single port, pressure compensating, press on type Manufactured by Hardie.
  - e. Gate Valves for ¾ inch through 2-1/2 inch pipe: Brass construction; solid wedge, IPS threads, and non-rising stem with wheel operating handle.
  - f. Quick Coupling Valves: Brass two-piece body designed for working pressure of 150 psi; operable with quick coupler. Equip quick coupler with locking rubber cover.
- 2.04 Valve Boxes: Valve sequence shall be Main Line, Isolation Valve , Valve Valve by Rainbird or Hunter.
- a. Gate Valves, Quick Coupling Valves, Drain Valves, Drip Line Blowout Stubs, and Wire Stub Box by Carson Brooks #910-10,
  - a. Drip Valve Assemblies by Carson Brooks #1220-12 box.
  - b. No master valves allowed.
- 2.05 Electrical Controls
- a. Low Voltage (24 volts):

1. Electrical Control Wire: AWG UFUL approved No. 14 direct burial copper wire.
  2. Electrical Common Wire: AWG UFUL approved No. 14 direct burial copper wire.
  3. Wire Colors:
    - a. Control Wires – Red
    - b. Common Wires – White
    - c. Spare Control Wires – Black
    - d. Spare Common Wires – Yellow
  4. If multiple controllers are utilized, and wire paths of different controllers cross each other, both common and control from each controller shall be different colors.
  5. Control Wire connections and splices shall be made with 3M direct bury splice, Rain Bird Pentite connectors, or similar dry splice method.
1. Auto controller by WeatherTRAK ET Pro2 Series.
  - b. High Voltage: Type required by local codes and ordinances, of proper size to accommodate needs of equipment serviced.
  - c. Electric Control Valves: must have manual flow adjustment (except drip valves) and manual bleed nut.
- 2.06 Sprinkler heads: Fabricated riser units with riser nipples of same size as riser opening in sprinkler body.
- Reduced Pressure Backflow Preventer:
- b. Bronze body with strainer
  - c. Manufacturers:
    1. Watts 223 Series (Preferred)
    2. Bell and Gossett
    3. Armstrong

### 3.0 PLANTING

- 3.01 Minimum Design Criteria: Landscape planting design shall consider selection of plant materials that are generally water efficient, resistant to deer browsing, will be easily maintained, and that are appropriate to the surrounding natural environment or site conditions. Ground cover and vegetation shall be designed to minimize erosion. All plantings, trees, lawn and ground covers shall be of varieties compatible with existing soils. Sizes of plants selected should be adequate to assure their survival; smaller plants are encouraged to maximize adaptability to the site conditions. All plants shall be guaranteed through one growing season.
- 3.02 Plants: Plants shall conform to American Association of Nurserymen Standards, ANSI Z60, in all ways. All plants shall have a normal habit of growth and shall be sound, healthy and vigorous. All plants shall have vigorous and fibrous root systems which are not root bound *and free of root defects*. Plants shall be symmetrical *with proper trunk caliper/taper* and typical for variety and species. Plants shall be nursery grown under climatic conditions similar to those in Jefferson County or shall be acclimatized prior to planting.

- 3.03 Fertilizers: Appropriate soil tests shall be performed and fertilizers, *amendments*, and application rates shall be recommended based on those tests and other relevant site conditions.
- 3.04 Topsoil: Topsoil will be stockpiled on the site for future use. If insufficient topsoil has been stockpiled on the site to complete the work supply import topsoil of sufficient quantity to complete the work. Soil shall be similar to existing topsoil and the approval of the Architect must be obtained before delivery of topsoil to the site.
- 3.05 Herbicides: Any pre-emergent or post-emergent herbicide used for weed control must be approved for use by the Campus Office of Environmental Health and Safety (EH&S).
- 3.05 Soil Preparation: A soils test will be executed prior to the planting of any and all plant material. The soils test will be done by the Testing Agency and furnished to the Architect. The soils test must include existing soils analysis, as well as recommendations for general soil amendments and planting soil mix. Subgrades for areas to receive topsoil: Subgrades shall be 6 inches below finished grades, plus or minus 1 inch, allowing for 6 inches of topsoil and soil amendments. Grades of planting areas not to receive topsoil shall be established to within 1 inch of finished grade.
- 3.06 Soil Loosening: No finish grading or installation of topsoil shall be done until soil loosening has occurred. Soil in all planting areas shall be cultivated to the depths specified below:
- Subgrade of areas to receive topsoil: 8" deep
- Areas not to receive topsoil: 8" deep
- 3.07 Planting shall follow the Colorado State University Extension, Colorado Master Gardener Program *GardenNotes #633, The Science of Planting Trees*
- 3.08 Soil Conditioning After soil preparation has been completed and high and low spots graded, add soil amendments as indicated and rototill, making repeated passes with the cultivator to the depth specified until the amendments have been thoroughly mixed.
- 3.09 Maintenance: As soon as all planting is completed, a planting review to determine the condition of the plantings will be held. Upon approval of the work by the Owner, the 60 day maintenance period shall begin.
- 3.10 Guarantee: All trees, shrubs, groundcovers, and other plant materials shall have a guarantee period which encompasses the replacement of dying, unhealthy, unsightly or non-typical habit plant material from the time of final acceptance for one calendar year. Any trees or other plant materials that die back and lose the form and size originally specified shall be replaced, even though they have taken root and are growing after the die-back.

#### **4.0 LAWN & GRASSES**

- 4.01 SPECIFY BLUEGRASS/RYEGRASS SEED MIX 80% BLUEGRASS, 20% PERENNIAL RYEGRASS.
- 4.02 General: Healthy, thick turf having undergone a program of regular fertilization, mowing and weed control; Free of objectionable weeds; Uniform in green color, leaf texture and density; Healthy, vigorous root system; Inspected and found free of disease, nematodes, pests and pest larvae by the entomologist of the State Department of Agriculture.

Preferred stock from Graff's Turf Farm.

- 4.03 Work notification: Notify owner's authorized representative at least seven (7) working days prior to start of seeding or sodding.
- 4.04 Compost shall be placed on bare ground and tilled to 6" depth at a rate of 3 cubic yards per 1000 square feet to reduce water consumption.
- 4.05 A starter fertilizer, supplied by the contractor, in the range of 18-46-0 shall be applied to topsoil in the application rate of 0.5 lbs. N/1000 square feet.
- 4.06 The maintenance and warranty period shall begin immediately after each area is installed until final acceptance of the project. During this time, the contractor shall be responsible for watering, if needed, mowing, spraying, weeding, and all related work and costs as necessary to insure that seeded areas are in a vigorous growing condition until final acceptance. The Grounds Supervisor will direct the contractor on what seeded areas need to be replaced at the final walk through.
- 4.07 Warrant sod for a period of one year from date of Substantial Completion be in a healthy, vigorous growing condition

END OF SECTION