

## Chapter 16. TEMPORARY TRAFFIC CONTROL

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### 16.1 Construction Traffic Control

#### 16.1.1 General

Traffic control devices shall be maintained in a safe operating condition at all times. The contractor shall provide for approval by the City Engineering Division, a traffic control plan, and shall comply with **Chapter 16 – Temporary Traffic Control** of these STANDARDS AND SPECIFICATIONS and the latest edition of the Manual of Uniform Traffic Control Devices (MUTCD). If the Engineering Division finds the construction area to be inadequately barricaded, they have the authority to stop work and direct that corrective measures be taken prior to proceeding with work.

- Temporary Traffic Control is required for any work in the City’s Right of Way. A submittal of a traffic control plan as well as a right of way permit with the Permit Application is necessary as per **Chapter 3- Permits**.
- All Traffic Control shall be provided for the reasonably safe and effective movement of road users through or around Temporary Traffic Control zones while reasonably protecting road users, workers, responders to traffic incidents, and equipment.

#### 16.1.2 Pedestrian Traffic

Every precaution shall be taken to ensure that construction work does not interfere with the movement of pedestrian traffic, which shall be maintained on the sidewalk at all times. Flagger shall be provided for guidance, as necessary.

- Where an excavation interrupts the continuity of the sidewalk, the contractor shall provide suitable bridge or deck facilities to be supplemented by the use of such proper devices and measures as prescribed in the Manual on Uniform Traffic Control Devices, most recent edition, for the safe and uninterrupted movement of pedestrian traffic. The edges or ends of the pedestrian bridge or decking shall be beveled or chamfered to a thin edge to prevent tripping.
- Temporary diversion walkways shall be hard surfaced and electric lighting shall be provided and kept continuously burning during hours of darkness, when required by the Engineering Division.
- Unless otherwise authorized by the Engineering Division, pedestrians shall not be channeled to walk on the traveled portion of the roadway.
- Under certain conditions, it may be necessary to divert pedestrians to the sidewalk on the opposite side of the street. Such crossings shall only be made at intersections or marked pedestrian crossovers.
- Facilities satisfactory to the Engineering Division shall be provided for pedestrian crossing at corners, pedestrian crossovers, and public transportation stops.
- Temporary facilities, including pedestrian routes around worksites, are also covered by the accessibility requirements of the Americans with Disabilities Act of 1990.

#### 16.1.3 Vehicular Traffic

Construction work zone traffic shall be controlled by signs, barricades, detours, etc., which are designed and installed in accordance with the Manual on Uniform Traffic Control Devices, most recent edition, and applicable City of Northglenn traffic standards. Traffic control plan shall be submitted and approved by the Engineering Division or his designee prior to start of any construction.

During construction of new facilities, traffic control should strive to keep the motorist from entering the facility. The primary means to accomplish this is by use of temporary barricades, located in advance of the point where new

construction joins existing and by appropriate signing. New construction shall not be opened to traffic without approval from the Engineering Division.

In general terms, a construction traffic control plan must be drawn on a map. For minor projects or local roadways, a neat sketch of the roadways and the proposed control devices will suffice. For major projects or major roadways, the traffic control plan should be superimposed on as-builts, construction plan drawings or another detailed map.

The Manual on Uniform Traffic Control Devices shall be the basis upon which the construction traffic control plan is designed in concern with proper, prudent, and safe engineering practice. All necessary signing, striping, coning, barricading, flagging, etc. shall be shown on the plan.

Directional access on roadways may be restricted [minimum travel lane width in construction area is ten feet (10')], but proper controls including flagging must be indicated. Removal of on-street parking should be considered and noted where applicable.

The temporary traffic control shall be properly maintained and cleaned throughout the temporary traffic control's use.

The temporary traffic control shall manage bicycle traffic through work zones.

#### **16.1.4 Public Notice for Temporary Traffic Control**

The City may require the Contractor to notify the public through signs, social media, newspaper, or individually about the adjacent construction and traffic interruption. This notice shall be completed a week in advance for large projects. The Engineering Division will notify the Contractor of this requirement through the Right of Way permit.

#### **16.1.5 Complete Work Efficiently**

All Temporary Traffic Control devices shall be removed as soon as practical when they are no longer needed.

## Chapter 17. REVEGETATION & SEEDING

### 17.1 General

This chapter consists of the work of revegetation with seeded grasses and the specifications to establish, maintain and warranting the reseeded areas. “Formal” landscaping requirements are specified in the Municipal Code. Final drawings, specifications and details shall be submitted to the City for review and approval prior to construction. All work shall be completed in accordance with these STANDARDS and SPECIFICATIONS in a manner consistent with accepted horticultural practices.

#### 17.1.1 Soil Preparation

##### Materials

Soil preparation shall be provided on all areas to be seeded, sodded, or otherwise planted. Organic matter for soil amendment shall be well aged dairy cattle manure, thoroughly composted organic material and other organic matter as approved by the City and shall contain a minimum of 60-percent organic matter. The mixture shall be free from clay subsoil, stones, lumps, plants or their roots, sticks, weed stolons and seeds, high salt content and other materials harmful to plant life. The materials shall be coarsely ground and thoroughly mixed together to ensure an even composition. The mix shall have an acidity no greater than pH 7.5 and shall meet the following mechanical analysis:

**Table 17.1: Classification Table for Amended Soil**

Sieve Size	% Passing	% Retained
<b>1-1/2 Inch Screen</b>	100	0
<b>1-Inch Screen</b>	90-100	0-10
<b>1/2 Inch Screen</b>	50-80	20-50
<b>#100 Mesh Sieve</b>	0-15	85-100

Note: If testing is required, it shall be done by a Professional Engineer registered in the State of Colorado and practicing in the field of soil mechanics. Testing shall be at the developer’s/contractor’s expense.

##### Placement

Upon establishment of approved grades, the soil surface shall be loosened by rototilling to a minimum of 8 inches, and all materials over two inches (2”) in diameter shall be removed. The organic matter shall be evenly spread over the entire surface at the rate of five (5) cubic yards per 1,000 square feet and shall be mixed thoroughly into the soil surface to a depth of eight inches (8”) by means of a rototiller, soil mixer or similar equipment. The surface shall then be finish-graded and compacted to the approved elevations. Prior to seeding or sodding, D1-ammonium phosphate (18-46-0) shall be spread evenly over the entire surface at the rate of 15 pounds per 1,000 square feet.

#### 17.1.2 Topsoiling

Topsoiling is not considered a portion of the ordinary soil preparation operations as described in these STANDARDS AND SPECIFICATIONS. However, the use of good topsoil is desirable, and may help in reducing water consumption and encouraging plant growth. When topsoil exists on the project site, the Developer/Contractor shall strip and stockpile the topsoil and redistribute the topsoil over the open space areas after the overlot grading is complete. The City has the prerogative of deleting all or a portion of the soil preparation requirements when topsoil is provided, depending on topsoil quality and quantity.

**Material**

Topsoil shall be fertile sandy loam topsoil, taken from a well-drained site and free from clay subsoil, stones, lumps, plants or their roots, sticks, weed stolons and seeds, high salt content and other materials harmful to plant life. The topsoil shall have an acidity in the range of pH 5.5 to pH 8.5 and shall be screened and meet the following mechanical analysis:

**Table 17.2: Classification Table for Topsoil**

Sieve Size	% Passing	% Retained
<b>1-Inch Screen</b>	100	0
<b>1/2 Inch Screen</b>	97-100	0-3
<b>#100 Mesh Sieve</b>	60-40	40-60

Note: If soil testing is required, it shall be by a Professional Engineer registered in the State of Colorado and practicing in the field of soil mechanics and in accordance with “Methods of Soils Analysis -- Agronomy No. 9” as published by the American Society of Agronomy. Testing shall be at the developer’s/contractor’s expense.

**Placement**

Upon establishment of the approved grade, the subsoil surface shall be loosened to a minimum depth of eight inches (8”) by tilling and all objects over two inches (2”) in diameter shall be removed. The topsoil shall be spread over the area to a minimum of six inches (6”) compacted depth and mixed lightly into the subsoil by means of a rototiller, soil mixer or similar equipment. The surface layer shall then be finish graded and compacted to the approved elevations.

**17.1.3 Fertilization**

A booster fertilizer with the chemical analysis of Nitrogen-12, Potash-12, Phosphorous-4 with 4 percent iron and 8 percent sulfur shall be applied on the prepared soil at the rate of 5 pounds per 1,000 square feet immediately prior to seeding. If a soil analysis indicates sufficient amounts of the above elements the City may, at its discretion, waive the requirement to fertilize.

**17.1.4 Mulching**

Mulch may be needed to conserve moisture, prevent crusting, reduce runoff and erosion, and help establish a plant cover. The need for mulch will be at the sole discretion of the City. Mulching material shall be applied immediately before or immediately after seeding. One of the mulching methods listed below will be acceptable:

- Application of hydro-mulch (wood fibers in a water slurry) -- minimum rate of 2,000 lbs/acre. Tackifier, fertilizer, etc. will be included in the hydro-mulch.
- Grain straw shall be used at an application rate of 4,000 lbs/acre of air-dried material. At least 50-percent of the mulch by weight shall be 10 inches or more in length. Mulch shall be anchored immediately after distributing with a mulch crimper, and tackifier.
- Mulch netting shall be firmly held in place with pins spaced not more than ten (10’) linear feet apart. In sandy or extremely loose soil, the pins shall be located not more than five (5’) linear feet apart.
- Jute netting, enkamat, and similar approved materials shall be installed according to the manufacturer’s recommendations.
- Excelsior mat shall be installed according to the manufacturer’s recommendations.

### 17.1.5 Seeding - General

Seeding of grasses or ground cover plants is required for either of two purposes:

- Temporary erosion control.
- Permanent seeding for erosion control and appearance

Temporary seeding for erosion control shall be placed within thirty (30) days of grading or construction and disruption of the soils.

### 17.1.6 Dry Land Seeding

Prior to any seeding, a depth of tillage sufficient to establish a seed bed will be done based on specific site conditions. Project scheduling should take advantage of spring or fall planting seasons for natural germination, but seeded areas shall be irrigated, if conditions so merit.

### 17.1.7 Germination Standard

The minimum standard for any dryland grass is five (5) seedlings of the seeded species per square foot. This count/inspection shall be taken four (4) weeks after germination by a qualified botanist. Any area not meeting the specifications on germination will be touch up seeded in one of the following methods:

- Hand Broadcast and Incorporation
- Mechanical Broadcast and Incorporation
- Interseeding with Seed Drilling Equipment

Dry land seeding, sometimes referred to as “native” seeding, shall be accomplished with mechanical power-drawn drills which have depth bands set to maintain a planting depth of at least 1/4-inch and shall be set to space the rows not more than seven inches (7”) apart. Seed that is extremely small shall be sowed from a separate hopper adjusted to the proper rate of application. When requested by the developer/contractor and approved by the City, seeding may be accomplished by means of approved broadcast or hydraulic-type seeders. Seed shall not be drilled or sown during windy weather or when the ground is frozen or otherwise untillable.

All seed sown by broadcast-type seeders shall be “raked in” or otherwise covered with soil to a depth of at least 1/4-inch. Hand method of broadcasting seed will be permitted only on small areas not accessible to machine methods. Water shall be applied as necessary to establish the cover crop. If inspections indicate that strips wider than the specified space between the rows planted have been left or other areas skipped, the City may require immediate re-sowing of seed in such areas at the developer’s expense. A Dry land seed mix shall be proposed by the developer/contractor and approved by the City.

## 17.2 Erosion Control - General

All materials shall conform to applicable requirements of "Erosion Control", listed as follows and meeting the requirements of ABAG Manual of Standards for Erosion and Sediment Control Measures.

## 17.3 Topsoil

The soil on the site shall meet the following criteria:

- The soil shall contain no more than seventy percent (70%) sand (as defined by USDA, Soil Conservation Service). This is to provide enough available water- holding capacity to support plant growth.

- The soil shall have sufficient porous base (greater than thirty percent (30%)) to permit adequate root penetration and provide for exchange of gases and water.
- The soil shall be free from any material harmful to plant growth.
- Topsoil that has been graded from the site shall be stockpiled, whenever possible, for reapplication on exposed graded slopes during the final grading stage. The soil shall be disked into the existing soil to provide for a good bond.

#### **17.4 Seed**

A seed mix similar to the native plants and grasses or the following seed mix shall be applied at above the minimum rate specified below: Seed Type Minimum Application Rate (Pounds per Acre) Blando Brome 30 Annual Ryegrass 20.

All seed shall be certified live and delivered to the site tagged and labeled in accordance with the California Agricultural Code and shall be acceptable to the County Agricultural Commissioner.

#### **17.5 Fertilizer**

Fertilizer shall contain a minimum of sixteen percent (16%) nitrogen, twenty percent (20%) available phosphoric acid, zero percent (0%) water soluble potash, and fifteen percent (15%) sulfur. It shall be uniform in composition, dry and free flowing, pellet or granular.

All fertilizer shall be delivered in unbroken or unopened containers, labeled in accordance with the applicable State regulations, and bearing the warranty of the producer for the grade furnished.

The Contractor is responsible for ensuring that all fertilizer and other chemicals are contained and do not run into the Storm Drainage System.

#### **17.6 Straw Mulch**

Straw mulch shall be of un-rotted small grain straw and shall be applied at the rate of four thousand pounds (4,000#) per acre. Mulch materials shall be relatively free of all noxious weeds. If the straw is applied with a blower, it shall be chopped in lengths not shorter than six inches (6").

#### **17.7 Straw Bales**

Straw shall be derived from wheat, oats, or barley, as required by law, before straw obtained from outside the County in which it is to be used is delivered to the site of the work. Straw that has been used for stable bedding shall not be used.

#### **17.8 Temporary & Permanent Planting of Exposed Soils**

Before seeding, necessary drainage controls such as dikes at tops of slopes and swales on slope benches shall be installed to prevent runoff from eroding slopes before grass is established. Temporary drainage controls shall remain in place until permanent drainage facilities are installed or until slopes are stabilized and temporary controls are no longer necessary for continued slope stability.

The area to be seeded shall have a firm seed bed that has previously been roughened by scarifying, disking, harrowing, chiseling, or track-walking, or otherwise worked to a depth of two inches (2") to four inches (4") unless a roughed condition already exists. No implement shall be used that will create an excessive amount of downward movement of soil or clods on sloping areas. The seedbeds may be prepared at the time of completion of earth-moving work.

Seeding, fertilizing, and mulching shall be done by October 1st of any year.

Slopes above critical areas, such as a water supply reservoir or an existing residence, shall be stabilized by October 1st of any year. Irrigation shall be used if rainfall is insufficient to establish protection by this date.

Seed shall be distributed uniformly over the seedbed by hand broadcasting, hydro-seeding or other approved method. Seed shall be covered to a depth of one-quarter to one-half inch (1/4"-1/2"), except when seed is hydraulically applied with a mulch. Seed shall not have a soil cover greater than one inch (1").

Fertilizer shall be distributed uniformly over the seedbed at a rate of not less than five hundred pounds (500#) per acre. Fertilizer shall be applied in any way that will result in uniform distribution. Fertilizer shall be incorporated into the soil if possible. Incorporation may be as part of the seedbed preparation or as part of the seeding operation. Fertilizer may also be applied as a mix with seed and fiber in a slurry (see Paragraph H below).

A mulch cover shall be distributed uniformly over the surface of the seeded area. Mulching shall follow immediately after the seeding. 1. For slopes flatter than 2:1 and within a fifty-foot (50') access of a straw blower, the following procedure shall be used: Straw mulch shall be applied at the rate of four thousand pounds (4,000#) per acre. The mulch shall be applied by hand, blower, or other suitable equipment. The mulch shall be anchored in place using hand tools, mulching rollers, disks, nets, chemical tackifiers or other suitable means. 2. For slopes steeper than two to one (2:1), mulch shall be applied hydraulically as specified in Item H, below.

- Hydro-seeding is defined as the simultaneous application of seed, fertilizer, and mulch in a slurry. The hydro-seeder shall be equipped with a built-in continuous agitation system of sufficient operating capacity to produce a homogeneous slurry and with a discharge system that applies the slurry to the slopes at a continuous and uniform rate. Seed shall not remain in the slurry longer than thirty (30) minutes. The slurry shall contain the required fertilizer (see preceding Item F) and shall also contain wood fiber to be applied at the rate of one thousand five hundred pounds (1,500#) of wood fiber per acre.
- The water used shall be potable water or Class 1 or 2 agricultural irrigation water.
- The slurry shall be continuously mixed and shall be mixed for at least five (5) minutes after the last addition before application starts. The slurry shall be applied at a rate that is non-erosive and minimizes runoff. The slurry must have fibrous and/or chemical adhesives to ensure retention of seed mix on soil slopes.