Re: Erosion Control Report and Drawings Requirements Accompanying Document

This document was created to help engineers and other design staff to better understand, meet and exceed the erosion control requirements listed in the "Fort Collins Stormwater Criteria Manual". The following portion of the document has the exact code that was recently passed by Ordinance No. 174, 2011. The "black standard type", is the code word for word, and the accompanying comments, written in *"blue and italicized type"* is to explain a simplified version of what is expected from the code. Following these comments should facilitate quicker processing of the material and having the materials accepted by the city in order to start building sooner.

Volume 3, Chapter 7

1.3.3 PDP Erosion Control Report and Drawings Submittal Requirements with Comments

Erosion Control Report and Plans are required at time of PDP Submittal.

(Both documents MUST be submitted)

The Erosion Control Report must contain or comply with the following:

a. A written analysis of the area proposed for construction in reference to developed conditions, rainfall erodibility, and proposed rainfall erosion and sediment control methods. Control of rainfall erosion and sediment transport shall be analyzed in a manner that clearly demonstrates an understanding of how temporary and permanent mitigation methods will be used, including a discussion of the timing of construction phases and the sequential installation of all erosion and sediment control Best Management Practices (BMPs) proposed in the plan.
(This section will focus on clearly defining the prior conditions of the site and to clearly define the nature and purpose of the construction activities that will be occurring on site: the description should be well detailed and very site specific; including such details as existing percent vegetation ground cover; estimates of total area of the site; estimates of expected disturbed area by clearing, excavating, grading; and outlining the closest receiving waters of the state and the path of travel to those waters. Also the phasing and sequential installation should encompass a detailed explanation of the phasing choices along with how these choices will minimize sediment transportation. This is also the section to disclose any anticipated allowable sources of non stormwater discharges, or any other existing relevant data (i.e. soil boring/lab tests/groundwater levels) to the site.)

b. Stormwater Management Controls:
Include a description of all stormwater management controls that will be implemented as part of the construction activity to control pollutants in stormwater discharges. The appropriateness and priorities of stormwater management controls should reflect the potential pollutant sources identified at the facility. The description of stormwater management controls should address the following components, at a minimum:

i.) Identify SWMP Administrator: Identify a specific individual(s), position, or title that is responsible for developing, implementing, maintaining, and revising the SWMP. This designated individual(s) should address all aspects of the facility's SWMP.

*(This should include the responsible parties for all 4 of the SWMP needs, but the maintenance is a must for communicating **immediate** correction to the site, including phone, fax, address, and/or email.)*

ii.) Identification of Potential Pollutant Sources: **Identify** and **describe** sources that may contribute pollutants to runoff, and **provide means of control** through BMP selection and implementation. At a minimum, evaluate **each of the following** potential sources of pollution: *(these are not the only sources, please add any that apply)*

1. All disturbed and stored soils;

Provide the area disturbed and location of the stockpile, along with the other structural and non structural practices to minimize erosion and sediment transportation.

2. Vehicle tracking of sediments;

This is a major potential pollution source and should identify a very detailed management control, not just a tracking pad. Examples are sweeping and scraping activities, as well as identifying and protecting the closest inlet to the tracking location, other examples could be, minimizing site access, street sweeping, gravel parking, paved area restriction for vehicles, wash racks, education, etc...

3. Management of contaminated soils;

Identify if there are any contaminated soils and where they are located, stored and disposed of.

4. Loading and unloading operations;

Describe the site's traffic operations and any steps taken to minimize the movement of soil from the site. i.e. having contractors parking on sidewalks as opposed to on the lot itself.

5. Outdoor storage activities (building materials, fertilizers, chemicals, etc.);

Describe cleanup procedures and possible secondary BMPs that could be applied to the storing of materials.

6. Vehicle and equipment maintenance and fueling;

Describe procedures that deal with repairing equipment in the least detrimental way possible while on site.

7. Significant dust or particulate generating processes;

Describe the processes that will be used to minimize the dust or other particulates from being released into the air.

8. Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents, oils, etc;

Describe the maintenance procedures that deal with possible pollutants in the least detrimental way possible while on site.

9. On-site waste management practices (waste piles, liquid wastes, dumpsters, etc.);

Provide the location of the waste material stockpile and possible BMPs to be used; these should be located a minimum of 50ft from any inlet structures or watercourses.

10. Concrete truck/equipment washing, including the concrete truck chute and associated fixtures and equipment;

Provide the location of washouts and describe the BMPs to be used to eliminate possible pollutants from leaving the site, these too should be located at least 50ft from any inlet structures or watercourses.

11. Dedicated asphalt and concrete batch plants;

If there is not to be one of these plants on site, clearly say there is no batch plant on site.

12. Non-industrial waste sources such as worker trash and portable toilets; and

*Provide the location of these sources; these too **MUST** be located a minimum of 50ft from any inlet structures or watercourses.*

13. Other areas or procedures where potential spills can occur.
This might be where groundwater and stormwater dewatering practices would be described.

Note, there should be a detail sheet of all the employed BMPs included in this section

c. For the establishment of dryland vegetation, the discussion must include soil types, seed mix, soil amendments, and mulches.
These are just one form of practices used to achieve final stabilization, please describe any other final stabilization practices used on the site in this section.

d. Detailed sequence of construction activities must be submitted as part of the erosion and sediment control plan. The plan identifies the sequence for all the major construction and erosion and sediment control activities, including overlot grading, soil and aggregate stockpiling, construction of permanent drainage facilities, and **maintenance activities**. The construction sequence will be used as a basis for

inspection of construction sites for compliance with the erosion and sediment control plan.
This is a sequence of construction activities chart and or descriptions to be included in the report itself.

The sequencing plan must clearly indicate the timing, extent and location where temporary BMP measures are installed and/or removed, depending on the type of construction activities undertaken, e.g. site grading, utilities installation, paving, flatwork, or vertical construction.
This is actually multiple pages of drawings that show progressive stages of the construction site, as construction proceeds over time. The examples provided, are not necessarily the only way to divide the evolution of erosion control needs on site, but are a good starting point. The main focus here is to show the inspector and the site SWMP Administrator the exact placement of BMPs as the site is being built out overtime. This should help provide an idea to the contractors that these BMPs are not a simple setup at the beginning and take down at the end. Erosion Controls need to be dynamic as a site evolves.

The construction sequence must include at least the following:
These are to help with the sequence charts and descriptions, not the sequence plans.

1. Installation of temporary erosion and sediment control measures
2. Sequence of all land disturbing activity
3. Drainage facility construction
4. Sediment basins, temporary channel stabilization
5. Seeding
6. Mulching
7. Required maintenance activities (e.g. expected frequency of sediment pond cleaning, after-storm checks of all BMPs, etc.)

e. Erosion control security calculations.

The Erosion Control Drawing must contain or comply with the following:
The Erosion Control Drawing should be the multiple page sequence plan.

The Erosion Control Drawing must use same base used for drainage study. The erosion and sediment control plan may be combined with the grading plan, providing all the required information can be shown, and the combined plan is not so cluttered with information that all the elements cannot be readily seen and deciphered. All drawings must be twenty-two by thirty-four (22x34) inches in size. A General Location Map shall be provided in sufficient detail to identify drainage flow entering and leaving the development and general drainage patterns. The map should be at a scale of 1" = 1000' to 1" = 8000' and show the path of all drainage from the upper end of any off-site basins to major drainage ways. The map must identify any major construction (i.e., development, irrigation ditches, existing detention facilities, culverts, storm sewers) along the entire path of drainage. Basins and divides are to be identified and topographic contours are to

be included. The Erosion Control Plan drawings of the proposed development or redevelopment must have a scale of 1" = 20' to 1" = 200' on 22" x 34" drawings.
These are clear enough but it says here that it may be combined with grading, it is a wise suggestion not to clutter the erosion control drawings with too much information.

a) Standard and job-specific construction details of erosion and sediment control measures, and standard and job specific erosion and sediment control notes.
These should not just be the standard notes block as added below, but should be intensified to describe the more important details from the Erosion Control Report. Remember, what is written here is what gets read by the contractor, and is easily referred back to when questions arise.
b) List vegetative specifications from this Manual if standard vegetation is to be used. Include alternate specifications and justification if they are to be used.
Please don't ask to reference Landscape plan, this should encompass a short but thorough description of any temporary or permanent seeding BMPs, it would also be great to show the location of these BMPs on the 'flatwork', or 'vertical construction' sections of the sequence plans as these are the most ideal times to install these BMPs.
c) List structural specifications from this Manual if standards are to be used. Include other specifications and justifications if they are to be used.

'This Manual' refers back to the Urban Storm Drainage Criteria Manual Vol. 3.

d) A construction detail for all proposed construction BMPs.

Emphasis on detail for ALL construction BMPs, both: structural and non-structural, temporary and permanent. Each type of BMP details should clearly explain: installation requirements to guarantee correct application of the BMP, and the maintenance requirements of these BMP as to correctly take care of these BMPs (There should also be clear description of how to identify when a BMP needs to be replaced due to 'wear and tear' and 'weathering'.) Permanent BMPs like Detention Facilities, or Stormceptors, should include maintenance requirements for after construction, that can be used to help prevent future problems to the effectiveness of the BMP.

e) The following standard erosion and sediment control notes:

1. The City Stormwater Department erosion control inspector must be notified at least 24 hours prior to any construction on this site.
2. All required BMPs shall be installed **prior** to any land disturbing activity (stockpiling, stripping, grading, etc). All of their required erosion control measures shall be installed at the appropriate time in the construction sequence as indicated in the approved project schedule, construction plans, and erosion control report.
3. Pre-disturbance vegetation shall be protected and retained wherever possible. Removal or disturbance of existing vegetation shall be limited to the area required for immediate construction operations, and for the shortest practical period of time.

4. All soils exposed during land disturbing activity (stripping, grading, utility installations, stockpiling, filling, etc.) shall be kept in a roughened condition by ripping or disking along land contours until mulch, vegetation, or other permanent erosion control is installed. No soils in areas outside project street rights of way shall remain exposed by land disturbing activity for more than thirty (30) days before required temporary or permanent erosion control (e.g. seed/mulch, landscaping, etc.) is installed, unless otherwise approved by the Stormwater Department.

5. The property must be watered and maintained **at all times** during construction activities so as to prevent wind-caused erosion. All land disturbing activities shall be immediately discontinued when fugitive dust impacts adjacent properties, as determined by the City Engineering Department.

6. All temporary (structural) erosion control measures must be inspected and repaired or reconstructed as necessary after each runoff event and every 14 days in order to assure continued performance of their intended function. All retained sediments, particularly those on paved roadway surfaces, shall be removed and disposed of in a manner and location so as not to cause their release into any drainageway.

7. No soil stockpile shall exceed ten (10) feet in height. All soil stockpiles shall be protected from sediment transport by surface roughening, watering, and perimeter silt fencing. Any soil stockpile remaining after 30 days shall be seeded and mulched.

8. City Ordinance prohibits the tracking, dropping, or depositing of soils or any other material onto city streets by or from any vehicle. Any inadvertent deposited material shall be cleaned immediately by the contractor.

9. Additional notes can (should) be added to reflect the erosion/sediment control plan of the individual development.

****There SHOULD be more than just these bare minimums.*