

## CHECKLIST FOR DEVELOPING A GESC PLAN – SELECTING BMPs ON 10 ELEMENTS OF AN EFFECTIVE GESC PLAN

### ELEMENT #1: PRESERVE AND STABILIZE DRAINAGEWAYS

Design Engineer			County Engineer			
Yes	No	N/A	Yes	No	N/A	
						<b>A. Drainageways shall not be Filled, Regraded, or Realigned.</b>
						1. Delineate 100 yr floodplain limits for all existing drainageways (based on future development peak discharges).
						2. Show limits of fill adjacent to drainageways and channel area to be preserved (shade undisturbed areas on drawings).
						3. Show Construction Fence (CF) or, if approved, Construction Markers (CM) around all stream preservation areas.
						<b>B. Ample Freeboard Above the 100 Year Floodplain Shall be Provided.</b>
						1. Provide ample freeboard above the 100 year future development floodplain to lot grades and lowest floor elevations (including basements in fill). Refer to Douglas County <i>Storm Drainage Design and Technical Criteria Manual</i> , as amended.
						<b>C. Existing Drainageways Shall be Stabilized.</b>
						1. Design grade control structures in all drainage channels as necessary. Refer to the Douglas County <i>Storm Drainage Design and Technical Criteria Manual</i> , as amended.
						2. Design bank stabilization improvements as necessary.
						3. Emulate natural systems in the design of C1 and C2 above.
						<b>D. Disturbance to Existing Drainageways Shall be Minimized and Quickly Restored.</b>
						1. Identify features whose construction within drainageways is unavoidable, such as the following:
						1A. Grade control structures.
						1B. Bank stabilization.
						1C. Road crossings (bridges or culverts).
						1D. Storm sewer outfalls.
						1E. Utility crossings.
						1F. Temporary stream crossings for construction access.

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Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

2. Determine limits of construction around the features identified in Item D.1 above that are just large enough to allow construction, but not larger than necessary, to minimize disturbance.
3. Show Construction Fence (CF) or, if approved, Construction Markers (CM) to delineate the limits of construction determined in Item D.2 above.
4. Identify coordinates or other means of locating Construction Fence (CF) or Construction Markers (CM) for contractor.
5. Show Check Dam (CD) or Reinforced Check Dam (RCD) immediately downstream of each disturbed area in the stream. Check sizing criteria in Section 3.17 of the GESC Manual.
6. Show Temporary Stream Crossings (TSC), as necessary. Stream crossings shall be limited to the minimum number necessary.
7. Show Erosion Control Blanket (ECB) in all disturbed areas of streams (within construction fence defining limits of construction) up to the top of the bank, to be installed immediately after construction in the stream is complete.

**E. Any New Drainageways Shall be Designed and Stabilized.**

1. Identify any additional small drainageways that are necessary to manage stormwater runoff on the site.
2. Determine design discharges and size the drainageways.
3. Design stabilization improvements as necessary for drainageways, including any drop structures or lining. For 2 year flows less than 10 cfs, criteria for Diversion Ditches (DD) may be used.

**F. Identify features whose construction within drainageways is unavoidable, such as the following.**

1. Determine if the following permits (and any others) are necessary. If so, complete the required documentation and submit applications.
  - 1A. Douglas County Floodplain Development Permit.
  - 1B. US Army Corps of Engineers Section 404

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

- Permit.  
1C. US Fish and Wildlife Service Threatened and Endangered Species approvals.  
1D. Conditional Letter of Map Revision.

### ELEMENT #2: AVOID THE CLEARING AND GRADING OF SENSITIVE AREAS

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

1. Conduct a resource inventory on the site and identify on the GESC Plan the type and aerial extent of features such as the following:
  - 1A. Protected habitat for endangered species.
  - 1B. Wetlands.
  - 1C. Nesting bird habitat.
  - 1D. Riparian corridors.
  - 1E. Forested areas.
  - 1F. Mature cottonwood stands.
  - 1G. Bedrock outcroppings.
  - 1H. Steep slopes.
  - 1I. Potential stormwater infiltration areas.
  - 1J. Historic, cultural, or archeological resources.
  - 1K. Areas of unique or pristine vegetation, habitat, or landform.
2. Endeavor to avoid, or minimize, disturbance to the sensitive areas identified in 1a-k above.
3. Show Construction Fence (CF) or, if approved, Construction Markers (CM) to delineate the limits of construction adjacent to areas to be preserved.

### ELEMENT #3: BALANCE EARTHWORK ONSITE

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

1. Endeavor to balance earthwork quantities on site through the following tasks.
  - 1A. Develop initial grading plan.
  - 1B. Check earthwork quantities for balance (consider shrink/swell).
  - 1C. Raise or lower portions of the site as necessary to try to balance earthwork.
  - 1D. Repeat steps b and c until balance is

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Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

- achieved.
- If it is impossible to balance earthwork quantities on site, prepare letter requesting a site variance including the following:
    - Reason for variance
    - Amount of material to be imported or exported.
    - Location of disposal site if export or source site if import.
    - GESC Permit numbers for disposal or source sites.
    - Detailed haul route plan and traffic control plan for haul route.
    - Type and number of trucks required to complete the import or export.

**ELEMENT #4: LIMIT THE SIZE OF GRADING PHASES TO REDUCE SOIL EXPOSURE.**

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

- For large projects, determine separate grading phases, each disturbing less than 40 acres (70 acres for soil mitigation projects).
- Balance earthwork for each phase following the guidance from Element 3, above.

**ELEMENT #5: STABILIZE SOILS IN A TIMELY MANNER.**

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

- Indicate Seeding and Mulching (SM) or permanent landscaping in all areas to be graded.
- Show Surface Roughening (SR) in all areas that are disturbed.
- Indicate Erosion Control Blanket (ECB) or Compost Blanket (CB) on slopes steeper than 4:1 and in all areas where an extra measure of stabilization is appropriate.

**ELEMENT #6: IMPLEMENT PERIMETER CONTROLS.**

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

- A. Upslope perimeters**
1. Show Construction Fence (CF) or Construction Markers (CM) to delineate the limits of construction along the sensitive areas and next to schools, trails and parks, unless an existing fence is located there.
  2. Use Diversion Ditch (DD) to capture runoff entering the site via sheet flow. Follow design guidance in Section 3.17 of the GESC Manual.
  3. For steep reaches, such as where the ditch conveys runoff down a channel bank to the bottom of a stream, the diversion ditch is to be lined based on the criteria shown in Section 3.17 of the GESC Manual.
  4. For an alternative to a lined ditch in steep sections, consider a Temporary Slope Drain.
- B. Downslope Perimeters.**
1. Show Construction Fence (CF) or Construction Markers (CM) to delineate the limits of construction along the sensitive areas and next to schools, trails and parks, unless an existing fence is located there.
  2. If the upslope disturbed drainage area exceeds 1 acre, use a Diversion Ditch (DD) or permanent drainageway to convey runoff to a Sediment Basin (SB).
  3. If the upslope disturbed drainage area is less than 1 acre, use a Diversion Ditch (DD), Reinforced Rock Berm (RRB), Sediment Control Log (SCL), or Silt Fence (SF). In general, the latter three BMPs are to be used on the contour. Check Section 3.17 of the GESC Manual for specific guidance pertaining to the use of these downslope perimeter controls.
  4. Use a Check Dam (CD) or Reinforced Check Dam (RCD) across a stream or drainage channel at the downslope perimeter of the site.

**ELEMENT #7: USE SEDIMENT BAINS FOR UPSTREAM AREAS EXCEEDING 1.0 ACRE**

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

1. Runoff from all disturbed areas greater than 1 acre shall be treated in a Sediment Basin (SB). Use the standard design for drainage areas less than 15 acres. For areas less than 1 acre, a Sediment Trap (ST) may be used.
2. If a non-standard design is used, construction drawings detailing the storage volume, embankment, spillway, and outlet are required. Refer to the Douglas County *Storm Drainage Design and Technical Criteria Manual*, as amended.
3. Wherever possible, sediment basins are to be located within any permanent water quality or quantity detention facilities. Permanent water quality or quantity detention facilities shall have a sediment basin incorporated within them. With at least half of the sediment basin storage volume required provided below the lowest outlet of a permanent detention facility.

**ELEMENT #8: PROTECT STEEP SLOPES.**

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

- A. Proposed Slopes Shall be no Steeper than 3 to 1.**
1. Ensure that no slopes are proposed that are steeper than 3H to 1V, except small areas of rip rap outlet protection near outfalls and culverts.
  2. Show Erosion Control Blanket (ECB) on slopes steeper than 4:1.
- B. Runoff Shall be Diverted Away from Steep Slopes.**
1. Use Diversion Ditch (DD) to capture runoff before it flows down the steep slope.
- C. Terracing Shall be Incorporated into the Grading of Steep Slopes.**
1. Use Terracing (TER) in steep slopes to break up the flow of incidental water and reduce the development of rill and gully erosion.

**ELEMENT #9: PROTECT INLETS, STORM SEWER OUTFALLS, AND CULVERTS.**

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

1. Show Inlet Protection (IP) at all street and area inlets.
2. Show Reinforced Rock Berm for Culvert Protection (RRB) at all culvert inlets.
3. Design outlet protection for all storm sewer outfalls and culvert outlets per the Douglas County *Storm Drainage Design and Technical Criteria Manual*, as amended.
4. Show Erosion Control Blanket (ECB) in stream areas disturbed by the construction of the outfall or culvert.

**ELEMENT #10: PROVIDE ACCESS AND GENERAL CONSTRUCTION CONTROLS**

Design Engineer			County Engineer		
Yes	No	N/A	Yes	No	N/A

1. Identify all limits of construction. Use Construction Fence (CF) or Construction Markers (CM) to delineate the limits of construction.
2. Provide one or more Vehicle Tracking Controls (VTC) at all entrance/exit points from a public street to a site. Including stop signs for all exiting traffic.
3. Show a Stabilized Staging Area (SSA) near the main access point.
4. Show adequate footprints for topsoil stockpiles. These stockpiles must have slopes no greater than 3 to 1.
5. Show a Concrete Washout Area (CWA) near all concrete work areas.
6. Show temporary access roads and stockpile areas.
7. Select areas for the vehicle tracking control, stabilized staging area, access roads, and stockpile areas that avoid disturbance to trees, desirable vegetation, steep areas and low, wet areas.