

GRADING, EROSION, AND SEDIMENT CONTROL (GESC) GENERAL NOTES

- The Arapahoe County (County) signature affixed to this document indicates that the County has reviewed the document and found it in general compliance with the Grading, Erosion and Sediment Control (GESC) Manual. The County, through acceptance of this document, assumes no responsibility (other than as stated above) for the completeness and/or accuracy of these documents.
- The adequacy of the GESC plan lies with the design engineer. Changes to design intent that meet the definition of major modifications must be approved by the design engineer and the County. See Note 10.
- The GESC or ESC Plan shall be considered valid for two (2) years from the date of plan approval by the County, after which time the plan shall be void and will be subject to re-review and re-approval by the County. Plans must conform to current requirements and shall meet good engineering, hydrologic and pollution control practices. Plans with issued GESC or ESC permits remain valid until GESC or ESC permit final close out, except in cases when the County revokes the GESC or ESC permit.
- Refer to construction plans for implementation of all permanent improvements, including post-construction control measures. Coordinate with the County for timing of installation of post-construction control measures.
- All materials and workmanship shall be subject to inspection by the County. The County reserves the right to accept or reject any such materials and workmanship that does not conform to the GESC Manual; GESC or ESC Plan; GESC or ESC Permit; or good engineering, hydrologic and pollution control practices.
- Appropriate control measures must be implemented prior to the start of a land disturbance activity, must control potential pollutants during each phase of construction, and must be continued through final stabilization. Appropriate structural and non-structural control measures must be maintained in operational condition.
- Control measures must be selected, designed, installed, implemented, and maintained to provide control of all potential pollutants.
- The placement of control measures shall be in accordance with the accepted GESC or ESC plan and GESC Manual.
- Any variation in material, type or location of control measures from the County-approved GESC or ESC plan will require approval from the County.
- The approved GESC plan may require changes or alterations after acceptance to meet the changing site or project conditions or to address insufficiencies in design or installation.
  - Minor modifications generally include modifications that do not increase the scope or change hydrology of the site, but modify/improve specific control measures in use at a site. Minor modifications include control measure substitutions for other measures that are equivalent in performance and/or are more suitable to specific site conditions, relocation of previously approved control measures within the limits of construction, or changes to control measures based on the phasing of the site. If alternative control measures will be used, control measure specifications must be submitted to and approved by the County.

The GESC permittee shall obtain prior approval for major modifications from the design engineer and approval from the County for any proposed changes. Major modifications to a GESC Plan are those involving re-engineering or changes to site hydrology and are not considered minor modifications. Control measures that may be classified as a major modification are indicated with a "box" surrounding the control measure acronym, as indicated on the legend, (this sheet, right). The permittee must update the GESC Plan as necessary to reflect site conditions for all modifications.

- After the County's signature and stamping of the GESC or ESC Plan, the permittee shall install non-earth disturbing initial-stage control measures indicated on the approved GESC or ESC plan. The permittee shall refer to the legend for initial non-earth disturbing control measures to be installed prior to the pre-construction meeting and initial inspection. If the installation of the non-earth disturbing initial-stage control measures are not approved by the County at the preconstruction meeting, the applicant may be required to pay a reinspection fee, address any problems with the control measure installation, and call to reschedule the preconstruction meeting and initial inspection. Construction activity may commence after permit issuance following a passing initial inspection.
- The County and GESC manager are required to attend the preconstruction meeting. In addition, the following representatives should attend the preconstruction meeting: general contractor, owner or owner's representative, alternate GESC manager, grading subcontractor, and control measure contractor and/or inspector.
- The permittee shall refer to the legend for earth-disturbing initial-stage control measures, such as sediment basins, sediment traps, and diversion ditches. Earth-disturbing initial-stage control measures shall be installed as soon as feasible after permit issuance.
- The GESC manager shall be on site as necessary to ensure the GESC plan and GESC permit requirements are being implemented and shall provide the County with contact information, including email and phone. In the event the GESC manager (or alternate GESC manager) cannot be reached within 24 hours, and a noncompliance has or may occur, a violation may be assessed. Notification shall be provided to the County if the GESC manager or alternate change.
- All construction traffic must exit the site through the County-approved access point. A vehicle tracking control pad or other stabilized surface approved by the County is required at all exit points on the site. Additional stabilized construction entrances may be added if approved by the County. It is the GESC or ESC permittee's responsibility to obtain any other approvals necessary to utilize additional access points.
- No recycled asphalt or concrete shall be used as a part of a control measure or for new or improved access roads within the limits of construction.
- The GESC or ESC permittee is responsible for cleanup of sediment, mud, or construction materials tracked onto paved areas. Paved areas including streets, sidewalks, and other impervious areas are to be kept clean throughout construction activity and shall be cleaned immediately with a street sweeper or similar device. Street washing is not allowed. The County reserves the right to require additional control measures to ensure streets are kept free of sediment, mud, or construction materials. Tracking outside of the limits of construction is not acceptable, is a violation of the GESC Permit, and can be enforced by the County.
- Accepted control measures shall be inspected and maintained in accordance with the GESC Manual, GESC or ESC plan, and GESC or ESC permit and kept in good repair for the duration of the project. All necessary maintenance and repair activities shall be completed immediately by the permittee.
- Straw bales are not permitted for use as a control measure.
- Appropriately store, cover, and/or isolate onsite potential construction-associated waste pollutants to prevent runoff of pollutants and contamination of groundwater. Portable toilets shall be anchored or positioned in a manner to prevent spilling and runoff of pollutants.
- The GESC or ESC permittee shall adhere to the accepted limits of construction. The County must approve any changes to the limits of construction, and at the County's discretion, additional control measures may be required in any additional areas of construction activity. The GESC or ESC permittee shall be held responsible for obtaining permission and restoration for work offsite.
- Significant dust or particulate-generating processes shall be minimized. Wind erosion shall be minimized during earthwork operations and control measures utilized as necessary to minimize dust from earthwork equipment and wind.
- Soils that will be stockpiled and remain inactive for more than thirty (30) days shall be stabilized within fourteen (14) days of stockpile construction. The permittee shall maximize the distance of active construction stockpiles from the floodplain. Active construction stockpiles shall not be placed within a floodplain unless accepted by the County. Reworking the disturbed area within the thirty (30) days for the sole purpose of avoiding the requirement to stabilize the exposed area shall not be considered an acceptable practice.
- Topsoil shall be stripped and stockpiled in the location shown on the accepted GESC Plan and in accordance with the GESC Narrative Sheet, unless otherwise accepted by the County.
- For spills that are an emergency, call 911. It is the responsibility of the GESC or ESC permittee to report any spills in accordance with federal, state, and local regulations. This includes any discharge of pollutants to State waters which shall be reported to the CDPHE-WQCD at 1-877-518-5608. All spills that impact the MS4 or State waters must be reported to the County at 720-874-6500. Failure to report spills to the County or failure to fully remediate any spills may result in enforcement.
- The cleaning of concrete delivery truck chutes is restricted to approved concrete washout locations. The discharge of water containing waste concrete offsite or to the MS4 is prohibited. All concrete waste shall be properly cleaned up and disposed of at an appropriate location.
- All dewatering onsite is the responsibility of the GESC or ESC permittee. All dewatering operations must not cause erosion or negatively impact the site. Any impacts that occur will be the responsibility of the GESC or ESC permittee to repair. For dewatering that requires a CDPHE-WQCD dewatering general permit, the permittee is responsible for obtaining and complying with the applicable permits.
- For projects that have a Public Improvement Permit (PIP) and/or Floodplain Permit, separate inspections will be conducted by the County to ensure compliance with applicable criteria outside of the GESC program.
- Hydraulic seeding is not an acceptable method of seeding.
- Importing or exporting excess fill dirt within the County area may require a GESC or ESC permit for the secondary site.

- All areas disturbed by construction and soil stockpiles shall be stabilized as soon as possible to reduce the duration of soil exposure to runoff events and the potential for erosion. All disturbed areas which are either final graded or will remain inactive for a period of more than thirty (30) days, shall be required to be stabilized within fourteen (14) days of the completion of the grading activities. Acceptable temporary stabilization control measures are as follows:
  - Surface roughening.
  - Seeding and mulching (temporary seed mix may only be used if area is inactive for 6 months or less unless otherwise approved by the County).
  - Erosion control blanket with or without seed.
  - Hydromulch.
  - Tarps (for stockpile areas).

- Acceptable final stabilization control measures are as follows:
- Seeding and mulching.
  - Erosion control blanket with seed.
  - Hydromulch with seed, as approved by the County.
  - Permanent hardscape including but not limited to concrete and pavement.
  - Sod or landscaping according to accepted landscape plans.

- Prior to the initial close-out inspection, the following must be completed:
  - All streets, sidewalks and flowlines must be cleaned and generally free of sediment or debris.
  - Clean all inlets, trickle channels, and all other drainage features, as necessary.
  - Remove construction control measures (per the accepted GESC or ESC plan) and install and/or maintain final stabilization control measures per the approved GESC or ESC plan.
- All stabilization control measures shall be installed and maintained in accordance with the approved GESC plan and the GESC Manual. Final stabilization is reached when construction activities at the site have been completed, permanent stabilization methods are complete, and temporary control measures are removed. Areas being stabilized with a vegetative cover must have evenly-distributed perennial vegetation. The vegetation coverage must be, at a minimum, equal to 70 percent of what would have been provided by native vegetation in a local, undisturbed area or adequate reference site. Note that it is the permittee's responsibility to control noxious weeds in accordance with local and state law, including List A Noxious Weeds which are required by the Colorado Department of Agriculture to be eradicated.

- A copy of the permit and accepted plans must be available upon request, within the timeframe specified within the request.
- For ESC permitted sites, refer to italicized notes.

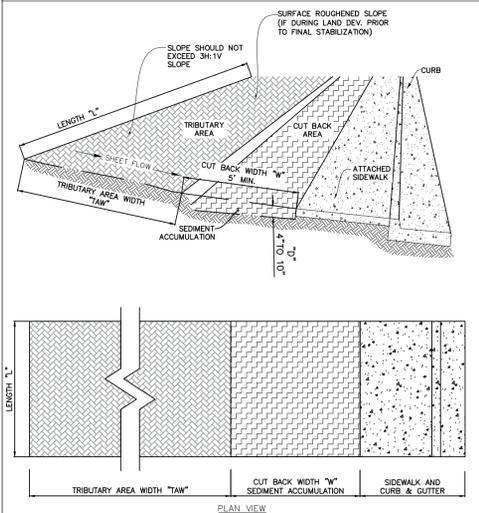
GRADING, EROSION, AND SEDIMENT CONTROL (GESC) GENERAL NOTES - OIL AND GAS PROJECTS

The following notes apply to projects constructed under the Arapahoe County Land Development Code, Section 5-3.6 Use by Special Review - Oil and Gas Facilities:

- At sites where the Oil and Gas Company or its contractor is not the site owner or operator, i.e. where proposed construction sites overlap existing construction sites, the Oil and Gas Company or its contractor must comply with the provision of the County GESC and the State of Colorado Stormwater Management Plan for the project their construction activities will impact. The Oil and Gas Company or its contractor must ensure that their activities do not render ineffective the erosion and sediment control measures for the site. Should the Oil and Gas Company or its contractor damage or render ineffective any control measures for the site, the Oil and Gas Company or its contractor will repair or replace the control measures affected. The Oil and Gas Company or its contractor will be responsible for control measures that includes seed or sod and must provide maintenance, including any watering necessary to ensure that establishment of the sod or seed.
- The Oil and Gas Company or its contractor is required to provide street sweeping of paved roadways and other control measures as necessary to ensure that sediments, resulting from their activity, do not enter the stormwater system, during or following construction. The street shall be swept throughout the day and at the end of each working day at minimum, but if tracking is identified, sweeping must be implemented immediately and continue until such time that tracking is no longer identified as a potential pollutant source.
- The use of hoses and water to flush or wash any material into any stormwater facility is prohibited.
- The Oil and Gas Company or its contractor must practice good housekeeping practices. This includes proper storage of hazardous material, waste disposal, equipment and material storage, fueling procedures, spill response and material recovery.

LEGEND			
1	(1)	CBC	CUT BACK CURB
2	(1)	CD	CHECK DAM
3	(1)	CWA	CONCRETE WASHOUT AREA
4	(1)	CF	CONSTRUCTION FENCE
5	(1)	CM	CONSTRUCTION MARKERS
6	(1)	CC	CURB CHECK
7	(1)	DW	DEWATERING
8	(2)	DD	DIVERSION DITCH
9	(2)	ECB	EROSION CONTROL BLANKET
10	(2)	GMS	GROUT MIXING STATION
11	(2)	IP	INLET PROTECTION
12	(2)	RWB	REINFORCED ROCK BERM
13	(2)	RRC	RRE FOR CULVERT PROTECTION
14	(3)	SB	SEDIMENT BASIN
15	(3)	SCL	SEDIMENT CONTROL LOG
16	(3)	ST	SEDIMENT TRAP
17	(3)	SM	SEEDING AND MULCHING
18	(3)	SF	SILT FENCE
19	(3)	SFR	SILT FENCE REINFORCED
20	(4)	SID	SLOPE INTERCEPT DITCH
21	(4)	SSA	STABILIZED STAGING AREA
22	(4)	SR	SURFACE ROUGHENING
23	(4)	TSI	TEMPORARY SLOPE DRAIN
24	(4)	TSC	TEMPORARY STREAM CROSSING
25	(4)	VTC	VEHICLE TRACKING CONTROL
26	(4)	WW	WTC WITH WHEEL WASH
		LOC	LIMITS OF CONSTRUCTION
		REG	MAY MEET MAJOR MODIFICATION REQUIREMENTS

INITIAL CONTROL MEASURE  
(NON-EARTH DISTURBING CONTROL MEASURES MUST BE INSTALLED PRIOR TO PERMIT ISSUANCE)



- INSTALLATION**
- SEE PLAN VIEW FOR:
    - LOCATIONS OF CHECK DAMS.
    - LENGTH, "L", CREST LENGTH, "CL", HEIGHT, "H", AND DEPTH, "D".
  - USE SURFACE ROUGHENING ON UPGRADIENT SLOPES IF DURING LAND DEVELOPMENT (IF PRIOR TO FINAL STABILIZATION).
  - CUT BACK CURB SHALL BE TRENCHED INTO THE CHANNEL BANKS TO ADEQUATELY ANCHOR WITH CENTER OF THE CHECK DAM LOWER TO ALLOW FOR OVERLAPPING AT THE CREST.
  - 5' WIDTH (W) AND 6" DEPTH (D) IS ACCEPTABLE FOR TRIBUTARY AREA WIDTHS UP TO 60'.

- INSPECTION AND MAINTENANCE**
- THE GESC PERMITTEE SHALL INSPECT AS NECESSARY TO ENSURE THE ADEQUACY AND FUNCTIONALITY OF THE CONTROL MEASURE.
  - REMOVE ACCUMULATED SEDIMENT WHEN 1/2 CAPACITY. DO NOT ALLOW SEDIMENT TO OVERFLOW ONTO CURB OR SIDEWALK.
  - IMPLEMENT ADDITIONAL CONTROL MEASURES SUCH AS DOWNGRADIENT SEDIMENT CONTROL LOGS, CURB CHECKS, OR OTHER BARRIERS AS ON-SITE CONDITIONS REQUIRE.



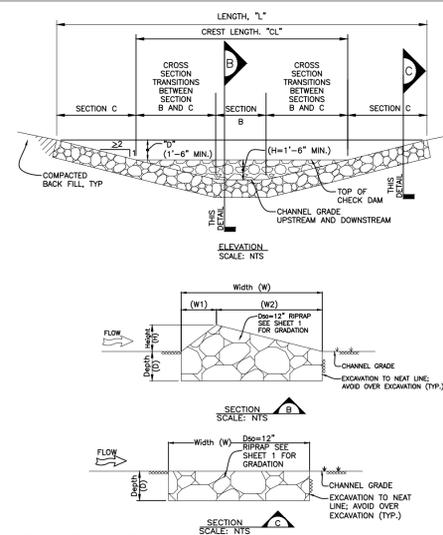
ROCK AND RIPRAP GRADATIONS

TABLE 1. RIPRAP GRADATIONS			
DESIGN STONE SIZE (INCHES)	% OF MATERIAL SMALLER THAN TYPICAL STONE	TYPICAL STONE EQUIVALENT DIAMETER (INCHES)	TYPICAL STONE WEIGHT (POUNDS)
6	70 - 100	12	95
	50 - 70	8	33
	2 - 10	6	0.4
9	70 - 100	15	160
	50 - 70	12	55
	2 - 10	9	1.3
12	70 - 100	21	440
	50 - 70	18	275
	2 - 10	12	65
18	100	30	1280
	50 - 70	24	650
	2 - 10	18	275
24	100	42	3500
	50 - 70	33	1700
	2 - 10	24	650

TABLE 2. RIPRAP BEDDING

SIETVE SIZE	MASS PERCENT PASSING SQUARE MESH SIEVES
	CLASS A
3"	100
1 1/2"	20 - 90
NO. 4	0 - 20
NO. 200	0 - 3

MATCHES SPECIFICATIONS FOR CDOT CLASS A FILTER MATERIAL AND MILE HIGH FLOOD DISTRICT TYPE 1 BEDDING. ALL ROCK SHALL BE FRACTURED FACE, ALL SIDES.



- CHECK DAM INSTALLATION NOTES**
- SEE PLAN VIEW FOR:
    - LOCATIONS OF CHECK DAMS.
    - LENGTH, "L", CREST LENGTH, "CL", HEIGHT, "H", AND DEPTH, "D".
  - CHECK DAMS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY UPSTREAM LAND-DISTURBING ACTIVITIES.
  - V-L RIPRAP SHALL BE UTILIZED FOR CHECK DAMS.
  - RIP RAP SHALL BE TRENCHED INTO THE CHANNEL BANKS TO ADEQUATELY ANCHOR WITH CENTER OF THE CHECK DAM LOWER TO ALLOW FOR OVERLAPPING AT THE CREST.

- CHECK DAM MAINTENANCE NOTES**
- SEDIMENT ACCUMULATED UPSTREAM OF CHECK DAMS SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF CHECK DAM IS WITHIN 1/2 OF THE HEIGHT OF THE CREST.
  - CHECK DAMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED.
  - WHEN CHECK DAMS ARE REMOVED, EXCAVATIONS SHALL BE FILLED WITH SUITABLE COMPACTED BACK FILL. ANY DISTURBED AREA SHALL BE SEEDING AND MULCHED AND COVERED WITH EROSION CONTROL BLANKET OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.



UTILITY NOTIFICATION CENTER OF COLORADO  
CALL BEFORE YOU DIG  
**811**  
Call 2 days prior to any digging, grading or excavating for the marking of underground member utilities

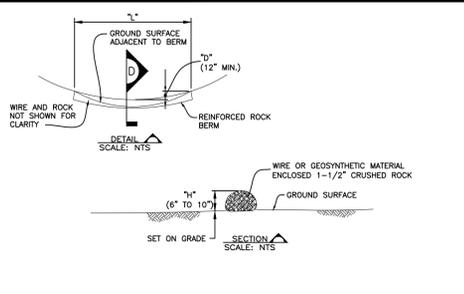
ARAPAHOE COUNTY  
PUBLIC WORKS AND DEVELOPMENT  
6924 S. LIMA STREET  
CENTENNIAL, CO 80112  
720-874-6500



GRADING EROSION AND SEDIMENT CONTROL  
STANDARD NOTES AND DETAILS  
REVISED OCTOBER 2025

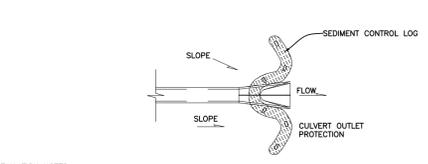
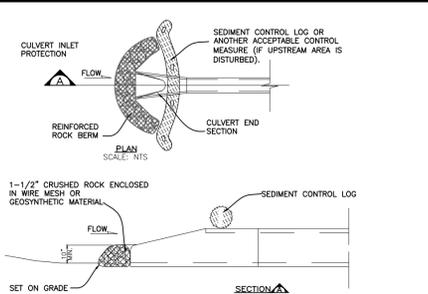
GESC  
SHEET  
1 OF 4





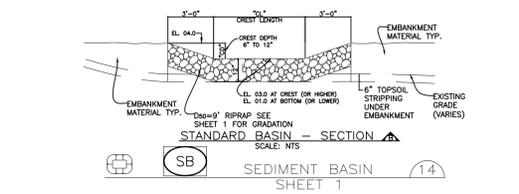
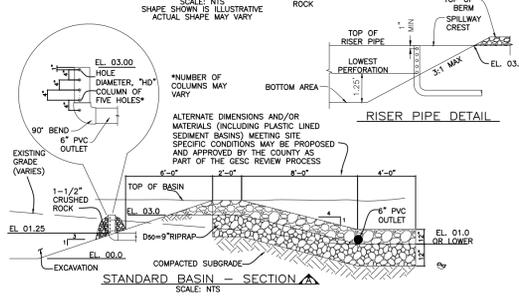
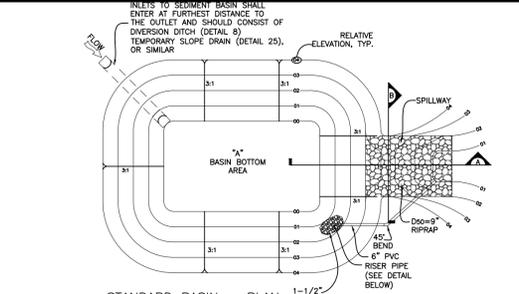
- REINFORCED ROCK BERM INSTALLATION NOTES**
- SEE PLAN VIEW FOR:
    - LOCATIONS OF REINFORCED ROCK BERMS.
    - LENGTH, "L", DEPTH, "D", AND HEIGHT, "H", DIMENSIONS.
  - REINFORCED ROCK BERM SECTION APPLIES TO CULVERT AND INLET PROTECTION.
  - IF LENGTH EXCEEDS LENGTH OF ROCK BERM, TWO OR MORE ROCK BERM SEGMENTS MAY BE REQUIRED AND NEED TO BE LAPPED BY AT LEAST 12" (SIMILAR TO SED LOG)
  - WIRE MESH SHALL BE FABRICATED OF 10 GAUGE WIRE TWISTED INTO A MESH WITH A MAXIMUM OPENING OF 1.0 INCH (COMMONLY TERMED "CHICKEN WIRE").
  - WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT 6-INCH CENTERS ALONG ALL JOINTS AND AT APPROXIMATELY 2-INCH CENTERS ON ENDS OF BERM.
  - FOR CONCENTRATED FLOW AREAS THE ENDS OF THE REINFORCED ROCK BERM SHALL BE 12" HIGHER THAN THE CENTER OF THE BERM.
  - CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES) (1-1/2" MINUS). RECYCLED CONCRETE CANNOT BE USED.
  - REINFORCED ROCK BERM TO PROVIDE STORAGE VOLUME EQUAL TO 1800 CUBIC FEET PER UPSTREAM ACRE.
  - IF LENGTH REQUIRED EXCEEDS THE LENGTH OF THE ROCK BERM, TWO OR MORE ROCK BERM SEGMENTS MAY BE REQUIRED AND SHALL BE OVERLAPPED A MINIMUM OF 12".

- REINFORCED ROCK BERM MAINTENANCE NOTES**
- THE GESC PERMITTEE SHALL INSPECT AS NECESSARY TO ENSURE THE ADEQUACY AND FUNCTIONALITY OF THE CONTROL MEASURE.
  - SEDIMENT ACCUMULATED UPSTREAM OF REINFORCED ROCK BERM SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF FILTER IS WITHIN APPROXIMATELY 1/2 OF THE HEIGHT OF THE CREST.
  - REINFORCED ROCK BERMS ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED.
  - WHEN REINFORCED ROCK BERMS ARE REMOVED, ANY DISTURBED AREA SHALL BE DRILL SEEDED AND CRMP MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.



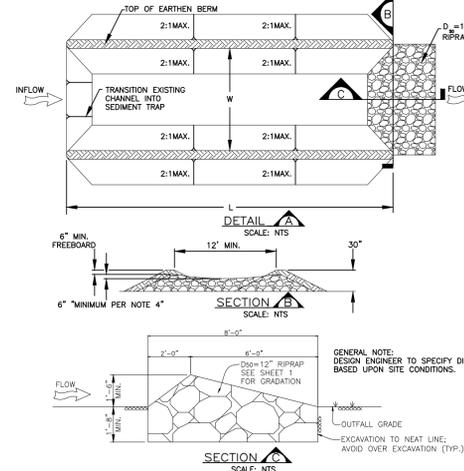
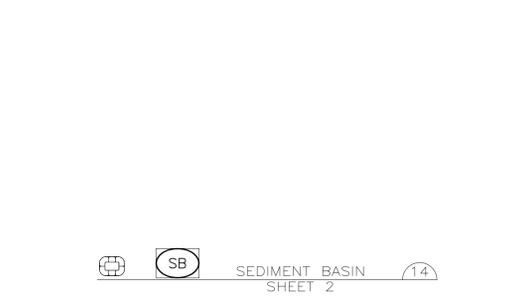
- INSTALLATION NOTES**
- SEE PLAN VIEW FOR:
    - LOCATIONS OF CULVERT PROTECTION.
    - 1-1/2" CRUSHED ROCK SHALL BE FRACTURED FACE ON ALL SIDES.
    - WIRE MESH SHALL BE FABRICATED OF WIRE TWISTED INTO A MESH WITH A MAXIMUM OPENING OF 1.0 INCH (COMMONLY TERMED "CHICKEN WIRE").
    - WIRE MESH SHALL BE SECURED USING "HOG RINGS" OR WIRE TIES AT APPROXIMATELY 6-INCH CENTERS ALONG ALL JOINTS AND AT APPROXIMATELY 2-INCH CENTERS ON ENDS OF BERM.
    - THE ENDS OF THE REINFORCED ROCK BERM SHALL BE HIGHER THAN THE CENTER OF THE BERM AND ALLOW FOR ADEQUATE OVERTOPPING CAPACITY.
    - CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES) (1-1/2" MINUS). RECYCLED CONCRETE CANNOT BE USED.

- MAINTENANCE NOTES**
- SEDIMENT ACCUMULATED UPSTREAM OF CULVERT INLET FILTER SHALL BE REMOVED WHEN THE SEDIMENT DEPTH UPSTREAM OF FILTER IS 1/2 THE HEIGHT OF THE REINFORCED ROCK BERM.
  - RRB FOR CULVERT PROTECTION ARE TO REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED.
  - WHEN CULVERT INLET FILTERS ARE REMOVED, ANY DISTURBED AREA SHALL BE SEEDED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.



- SEDIMENT BASIN INSTALLATION NOTES**
- MAXIMIZE THE DISTANCE BETWEEN INFLOW POINT AND OUTLET, AS FEASIBLE.
  - SEE PLAN VIEW FOR:
    - LOCATION OF SEDIMENT BASIN.
    - TYPE OF BASIN (STANDARD BASIN OR NON-STANDARD BASIN).
    - FOR STANDARD BASIN, CREST LENGTH, "CL", CREST DEPTH, "CD", BOTTOM AREA, "A", AND HOLE DIAMETER, "HD".
    - FOR NON-STANDARD BASIN, SEE CONSTRUCTION DRAWINGS FOR DESIGN OF BASIN INCLUDING RISER HEIGHT, "R", NUMBER OF COLLARS, "N", HOLE DIAMETER, "HD", AND PIPE DIAMETER "D".
  - SEDIMENT BASINS MUST BE INSTALLED AS INDICATED ON INITIAL GESC PLAN, AS SOON AS FEASIBLE AFTER PERMIT ISSUANCE.
  - PERMITTEE IS RESPONSIBLE FOR ADEQUATE PHASING OF SEDIMENT BASIN IF ALL CONDITIONS CANNOT BE INSTALLED IMMEDIATELY.
  - EMBANKMENT MATERIAL SHALL BE COMPACTED.
  - PIPE SCH 40 OR GREATER SHALL BE USED.
  - CRUSHED ROCK SHALL BE FRACTURED FACE (ALL SIDES) (1-1/2" MINUS). RECYCLED CONCRETE CANNOT BE USED.
  - THE DETAILS SHOWN ON THIS SHEET PERTAIN TO STANDARD SEDIMENT BASIN(S) IDENTIFIED ON THE GESC PLAN VIEW DRAWINGS USED FOR DRAINAGE AREAS LESS THAN 15 ACRES. SEE CONSTRUCTION DRAWINGS FOR EMBANKMENT, STORAGE VOLUME, SPILLWAY, OUTLET, AND OUTLET PROTECTION DETAILS FOR ANY SEDIMENT BASIN(S) THAT HAVE BEEN INDIVIDUALLY DESIGNED FOR DRAINAGE AREAS LARGER THAN 15 ACRES.

- SEDIMENT BASIN MAINTENANCE NOTES**
- THE GESC PERMITTEE SHALL INSPECT AS NECESSARY TO ENSURE THE ADEQUACY AND FUNCTIONALITY OF THE CONTROL MEASURE.
  - SEDIMENT SHALL BE REMOVED FROM THE SEDIMENT BASIN WHEN DESIGNED STORAGE VOLUME IS NO MORE THAN ONE-THIRD FILLED WITH SEDIMENT, OR AS OTHERWISE SPECIFIED BY THE COUNTY.
  - SEDIMENT BASINS ARE TO REMAIN IN PLACE AND KEPT IN MAINTAINED CONDITION UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED.
  - THE DISTURBED AREA SHALL BE SEEDED AND MULCHED OR OTHERWISE STABILIZED IN A MANNER APPROVED BY THE COUNTY.
  - TRASH AND DEBRIS SHALL BE REMOVED FROM THE SEDIMENT BASIN AS NEEDED TO PREVENT CLOGGING AT THE OUTLET.



- SEDIMENT TRAP INSTALLATION NOTES**
- SEE PLAN VIEW FOR:
    - LOCATION, LENGTH AND WIDTH OF SEDIMENT TRAP.
  - SEDIMENT TRAPS INDICATED ON INITIAL GESC PLAN SHALL BE INSTALLED PRIOR TO ANY OTHER LAND-DISTURBING ACTIVITIES OR AS SOON AS FEASIBLE.
  - SEDIMENT TRAP BERM SHALL BE CONSTRUCTED FROM MATERIAL FROM EXCAVATION. THE BERM SHALL BE COMPACTED.
  - RIPRAP OUTLET SHALL BE CONSTRUCTED WITH D<sub>50</sub> = 12" RIPRAP WITH A MINIMUM OVERTOP OF 6".
  - THE TOP OF THE EARTHEN BERM SHALL ALLOW FOR OVERTOPPING.
  - THE ENDS OF THE RIPRAP OUTLET STRUCTURE SHALL ALLOW FOR OVERTOPPING.
  - OVERTOPPING MUST OCCUR ON A STABILIZED SURFACE TO INCLUDE WELL VEGETATED AREAS, RIP RAP, OR PAVEMENT.
  - SEDIMENT TRAP SIZED TO PROVIDE STORAGE VOLUME EQUAL TO 1800 CUBIC FEET PER UPSTREAM ACRE.

- SEDIMENT TRAP MAINTENANCE NOTES**
- THE GESC PERMITTEE SHALL INSPECT AS NECESSARY TO ENSURE THE ADEQUACY AND FUNCTIONALITY OF THE CONTROL MEASURE.
  - SEDIMENT ACCUMULATED UPSTREAM OF RIPRAP SHALL BE REMOVED WHEN THE UPSTREAM SEDIMENT DEPTH IS WITHIN 1/2 THE HEIGHT OF THE RIPRAP OUTLET STRUCTURE.
  - SEDIMENT TRAPS SHALL REMAIN IN PLACE UNTIL THE UPSTREAM DISTURBED AREA IS STABILIZED.
  - WHEN SEDIMENT TRAPS ARE REMOVED THE DISTURBED AREA SHALL BE DRILLED SEEDED AND CRMP MULCHED OR STABILIZED IN A MANNER APPROVED BY THE COUNTY.



- SEEDING AND MULCHING INSTALLATION NOTES**
- SEE PLAN VIEW FOR:
    - AREA OF SEEDING AND MULCHING.
    - TYPE OF SEED MIX.
  - ALL BRANDS FURNISHED SHALL BE FREE FROM SUCH NOXIOUS WEED SEEDS TO INCLUDE BUT NOT LIMITED TO RUSSIAN OR CANADIAN THISTLE, COARSE FESCUE, EUROPEAN BIRCHWOOD, JOHNSON GRASS, KNAF WEED, LEAFY SPURGE AND FREE FROM COLORADO LIST A, B, & C WEEDS.
  - SEED WHICH HAS BECOME WET, MOLDY, OR OTHERWISE DAMAGED IN TRANSIT OR IN STORAGE WILL NOT BE ACCEPTABLE. SEED TICKETS SHALL BE PROVIDED TO THE COUNTY UPON REQUEST.
  - DRILL SEEDING MIX SHALL CONFORM TO THE TABLE BELOW UNLESS OTHERWISE APPROVED BY THE COUNTY. IF THE SEED AVAILABLE ON THE MARKET DOES NOT MEET THE MINIMUM PURITY AND GERMINATION PERCENTAGES SPECIFIED, THE CONTRACTOR MUST COMPENSATE FOR A LESSER PERCENTAGE OF PURITY OR GERMINATION BY FURNISHING SUFFICIENT ADDITIONAL SEED TO EQUAL THE SPECIFIED PRODUCT. THE TAGS FROM THE SEED MIXES MUST BE SUPPLIED TO CONTRACTOR AND FORWARDED TO THE COUNTY GESC INSPECTOR.
  - THE FORMULA USED FOR DETERMINING THE QUANTITY OF PURE LIVE SEED (PLS) SHALL BE (POUNDS OF SEED) X (PURITY) X (GERMINATION) = POUNDS OF PURE LIVE SEED (PLS).
  - PERMANENT SEED MIX SHALL BE USED UNLESS OTHERWISE APPROVED BY THE COUNTY.
  - ALL AREAS TO BE SEEDED AND MULCHED SHALL HAVE NATIVE TOPSOIL OR APPROVED SOIL AMENDMENTS SPREAD TO A DEPTH OF AT LEAST 6 INCHES (LOOSE DEPTH). ALL DISTURBED AREAS SHALL BE FILLED TO A DEPTH OF 6 INCHES PRIOR TO SPREADING TOPSOIL. THE TOP 6 INCHES OF THE SEED BED SHALL BE GENERALLY FREE OF ROCKS GREATER THAN 4 INCHES AND SOIL CLOSURE GREATER THAN 2 INCHES AND WOODY DEBRIS. SEEDING OVER ANY COMPACTED AREAS THAT HAVEN'T BEEN THOROUGHLY TILLED SHALL BE REJECTED.
  - SEED IS TO BE APPLIED USING A MECHANICAL DRILL TO A DEPTH OF 1/4 INCH AND NOT MORE THAN 3/4 INCH. ROW SPACING SHALL BE NO MORE THAN 6 INCHES.
  - NEED FREE AND SEED FREE LONG STEMMED STRAW MULCH SHALL BE APPLIED AT A RATE OF 4,000 POUNDS PER ACRE AND MECHANICALLY CRIMPED INTO THE SOIL. MULCH SHALL BE APPLIED AND MECHANICALLY ANCHORED TO A DEPTH OF AT LEAST 3 INCHES.
  - IF THE PERMITTEE DEMONSTRATES TO THE COUNTY THAT IT IS NOT POSSIBLE TO DRILL SEED, SEED IS TO BE UNIFORMLY BROADCAST AT TWO TIMES THE DRILLED RATE, THEN LIGHTLY RAKED TO PROVIDE A SEED DEPTH OF APPROXIMATELY 1/4 INCH, THEN ROLLED TO CONTACT, THEN MULCHED AS SPECIFIED ABOVE.
  - MULCH SHALL BE APPLIED WITHIN 24-HOURS OF SEEDING.
  - TACKIFIER SHOULD BE UTILIZED TO REDUCE STRAW DISPLACEMENT.

- SEEDING AND MULCHING MAINTENANCE NOTES**
- SEEDED AND MULCHED AREAS SHALL BE INSPECTED FOR REQUIRED COVERAGE UNTIL FINAL CLOSE OUT IS ISSUED. REPAIRS AND RE-SEEDING AND MULCHING SHALL BE UNDERTAKEN AFTER THE FIRST GROWING SEASON FOR ANY AREAS FAILING TO MEET THE REQUIRED COVERAGE.
  - RILL AND GULLY EROSION SHALL BE FILLED WITH TOPSOIL PRIOR TO RESEEDING. THE RESEEDING METHOD SHALL BE APPROVED BY THE COUNTY.

**TEMPORARY DRILL SEEDING MIX**

SPECIES	VARIETY	NOTES	% IN MIX	POUNDS OF PLS PER ACRE
SMOOTH BROMEGRASS	LINCOLN	PICS	30	3.9
INTERMEDIATE WHEATGRASS	OHIE	PICS	30	4.5
PUBESCENT WHEATGRASS	LUNA	PICS	30	4.2
ANNUAL RYEGRASS	N/A	AICB	10	0.8
TOTAL			100	13.4

NOTES: P=PERENNIAL  
A=ANNUAL  
H=INTRODUCED  
C=COOL SEASON  
S=SOO TOWER  
B=BUNCHGRASS



**UPLAND SEED MIX - WITH FORBS<sup>1</sup>**

SPECIES	SCIENTIFIC NAME	SEASON	% IN MIX	SEEDS/LB.	LBS PLS <sup>2</sup> /AC
NATIVE GRASSES					
BIG BLUESTEM	ANDROPOGON GERARDII	WARM	8	130,000	1.6
SIDEOTS GRAMA	BOUTELOUA CURTIPENDULA	WARM	8	191,000	1.1
BLUE GRAMA	BOUTELOUA GRACILIS	WARM	8	825,000	0.3
CANADA WILDRYE	ELYMUS CANADENSIS	COOL	8	115,000	1.8
THICKSPIKE WHEATGRASS	ELYMUS LANCEOLATUS SPP. LANCEOLATUS	COOL	5	154,000	0.8
STREAMBANK WHEATGRASS	ELYMUS LANCEOLATUS SPP. PSAMMOPHILUS	COOL	5	156,000	0.8
SLENDER WHEAT GRASS	ELYMUS TRACHYCALLUS	WARM	10	159,000	1.6
NEEDLE AND THREAD	HEPHEROSTIPA COMATA	COOL	8	115,000	1.8
WESTERN WHEATGRASS	PASCOPYRUM SMITHI	COOL	10	110,000	2.4
INDIAN GRASS	SORGHASTRUM NUTANS	WARM	10	170,000	1.5
SAND DROPSSEED	SPOROBOLUS CRYPTANDRUS	WARM	10	5,298,000	0.1
NATIVE WILDFLOWERS					
BLACK-BEED SUSAN	RUBICEKIA HIRTA	SUMMER-FALL	1	1,710,000	0.1
SULFUR FLOWER	ERODIUM UMBELLIFORME	FALL	2	209,000	0.3
PRAIRIE ASTER	MACHEREHATRA TANACETIFOLIA	SUMMER	1	408,000	0.1
PURPLE PRAIRIE CLOVER	DALEA PURPUREUM	SUMMER	1	210,000	0.1
WESTERN YARROW	ACHILLEA MILEFOLIUM VAR. OCCIDENTALE	SUMMER-FALL	2	2,770,000	0.1
PLAINS COREOPSIS	COREOPSIS TINCTORIA	SUMMER-FALL	1	1,400,000	0.1
INDIAN BLANKET FLOWER	GALLIARDA ARISTATA	SUMMER-FALL	1	132,000	0.2
PURPLE CONFLOWER	ECHINACEA PURPUREA	SUMMER	1	117,000	0.2
TOTAL			100	15 LBS PLS <sup>2</sup> /AC	

- <sup>1</sup> TO BE INSTALLED AT APPROXIMATELY 24" ABOVE WATER LINE.  
<sup>2</sup> PLS = PURE LIVE SEED PER POUND BASED 60 SEEDS PER SQUARE FOOT. IF BROADCAST SEEDING, DOUBLE THE RATE APPLIED.  
<sup>3</sup> IF DESIRED, TREES AND SHRUBS FROM THE COTTONWOOD SHRUB WOODLAND COMPOSITION SCHEDULE CAN BE INSTALLED IN THIS ZONE.



**PERMANENT DRILL SEEDING - WETLAND SEED MIX<sup>1</sup>**

SPECIES	SCIENTIFIC NAME	SEASON	% IN MIX	SEEDS/LB.	LBS PLS <sup>2</sup> /AC
NATIVE WILDFLOWERS					
SLOUGH GRASS	BECKMANNIA SYZYGACHE	COOL	20	1,150,000	0.5
CANADIAN REED GRASS	CALAMAGROSTIS CANADENSIS	COOL	20	2,270,000	0.2
TUFTED HAIR GRASS	DESCHAMPSIA CESPITOSA	COOL	10	2,500,000	0.1
COMMON SPIKE RUSH	ELEOCHARIS PALUSTRIS	COOL	15	620,000	0.6
BALTIC RUSH	JUNCUS BALTICUS	COOL	15	10,900,000	0.4
KNOTTED RUSH	JUNCUS NODOSUS	COOL	10	12,300,000	0.1
TORREY'S RUSH	JUNCUS TORREYI	COOL	10	12,300,000	0.1
TOTAL			100	2 LBS PLS <sup>2</sup> /AC	

- <sup>1</sup> TO BE INSTALLED AT APPROXIMATELY 6" TO 6" ABOVE WATER LINE.  
<sup>2</sup> PLS = PURE LIVE SEED PER POUND BASED 60 SEEDS PER SQUARE FOOT. IF BROADCAST SEEDING, DOUBLE THE RATE APPLIED.

**PERMANENT DRILL SEEDING<sup>1</sup> - TRANSITION SEED MIX - WITHOUT FORBS**

SPECIES	SCIENTIFIC NAME	SEASON	% IN MIX	SEEDS/LB.	LBS PLS <sup>2</sup> /AC
NATIVE GRASSES					
CANADA WILDRYE	ELYMUS CANADENSIS	COOL	15	115,000	3.4
STREAMBANK WHEATGRASS	ELYMUS LANCEOLATUS SPP. PSAMMOPHILUS	COOL	15	156,000	2.5
SLENDER WHEAT GRASS	ELYMUS TRACHYCALLUS	WARM	10	159,000	1.6
BALTIC RUSH	JUNCUS BALTICUS	COOL	15	10,900,000	0.1
SWITCHGRASS	PANICUM VIRGATUM	WARM	15	369,000	1.0
WESTERN WHEATGRASS	PASCOPYRUM SMITHI	COOL	15	110,000	3.6
SAND DROPSSEED	SPOROBOLUS AIROIDES	WARM	15	1,758,000	0.2
TOTAL			100	12.4 LBS PLS <sup>2</sup> /AC	

- <sup>1</sup> TO BE INSTALLED AT APPROXIMATELY 6" TO 24" ABOVE WATER LINE.  
<sup>2</sup> PLS = PURE LIVE SEED PER POUND BASED 60 SEEDS PER SQUARE FOOT. IF BROADCAST SEEDING, DOUBLE THE RATE APPLIED.  
<sup>3</sup> IF DESIRED, SHRUBS FROM THE WILLOW SHRUBLAND PLANT COMPOSITION SCHEDULE CAN BE INSTALLED IN THIS ZONE.

**PERMANENT DRILL SEEDING<sup>1</sup> - TRANSITION SEED MIX - WITH FORBS**

SPECIES	SCIENTIFIC NAME	SEASON	% IN MIX	SEEDS/LB.	LBS PLS <sup>2</sup> /AC
NATIVE GRASSES					
CANADA WILDRYE	ELYMUS CANADENSIS	COOL	15	115,000	3.4
STREAMBANK WHEATGRASS	ELYMUS LANCEOLATUS SPP. PSAMMOPHILUS	COOL	15	156,000	2.5
SLENDER WHEAT GRASS	ELYMUS TRACHYCALLUS	WARM	10	159,000	1.6
BALTIC RUSH	JUNCUS BALTICUS	COOL	15	10,900,000	0.1
SWITCHGRASS	PANICUM VIRGATUM	WARM	15	369,000	1.0
WESTERN WHEATGRASS	PASCOPYRUM SMITHI	COOL	15	110,000	3.6
SAND DROPSSEED	SPOROBOLUS AIROIDES	WARM	15	1,758,000	0.2
TOTAL			100	15.5 LBS PLS <sup>2</sup> /AC	



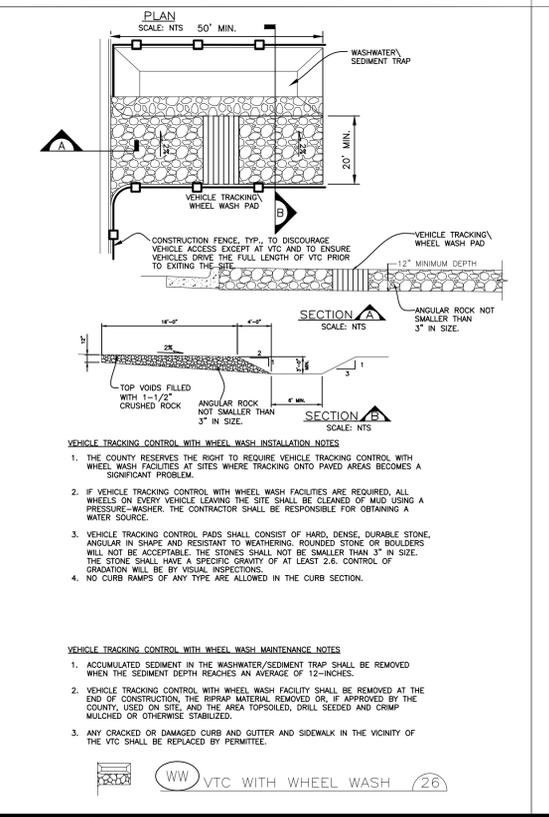
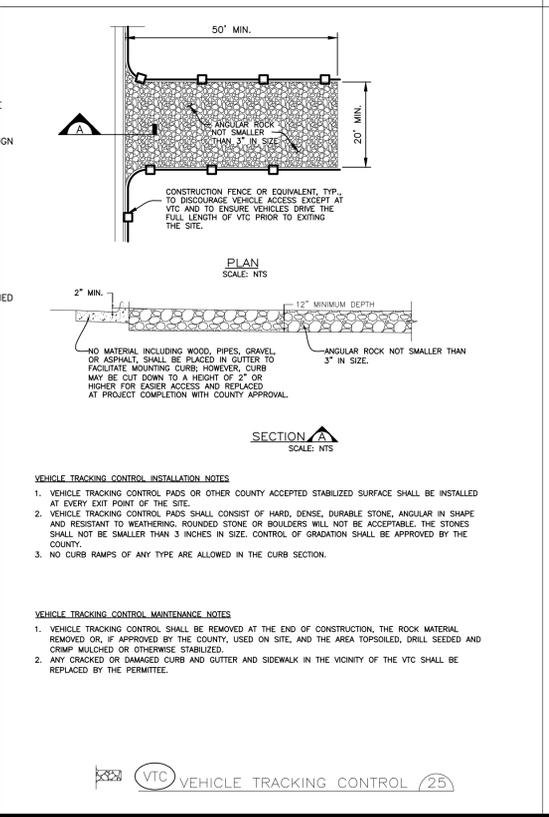
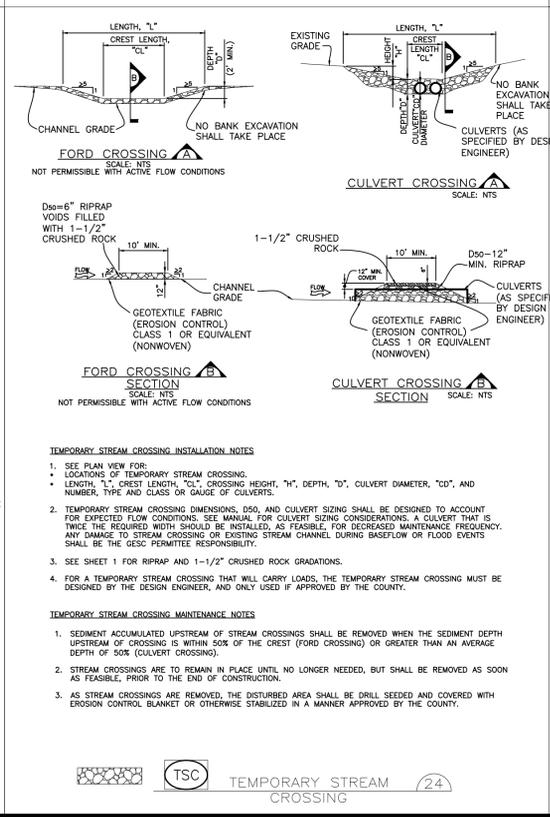
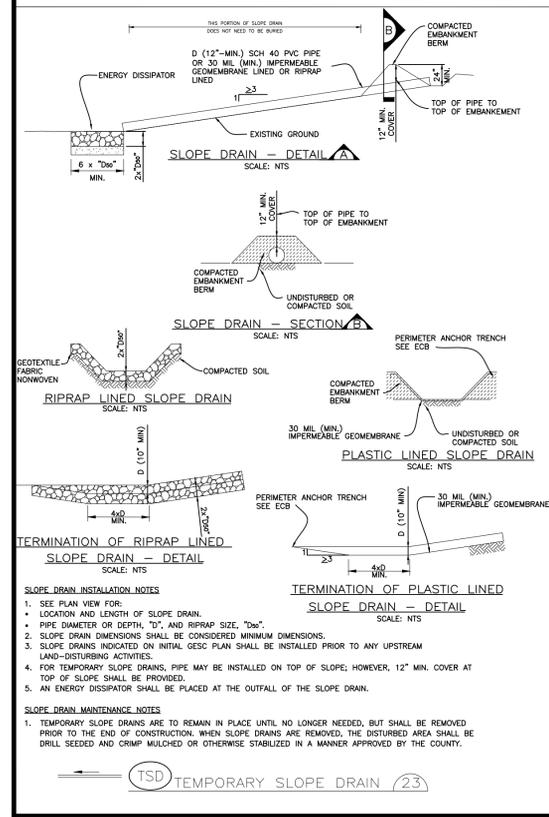
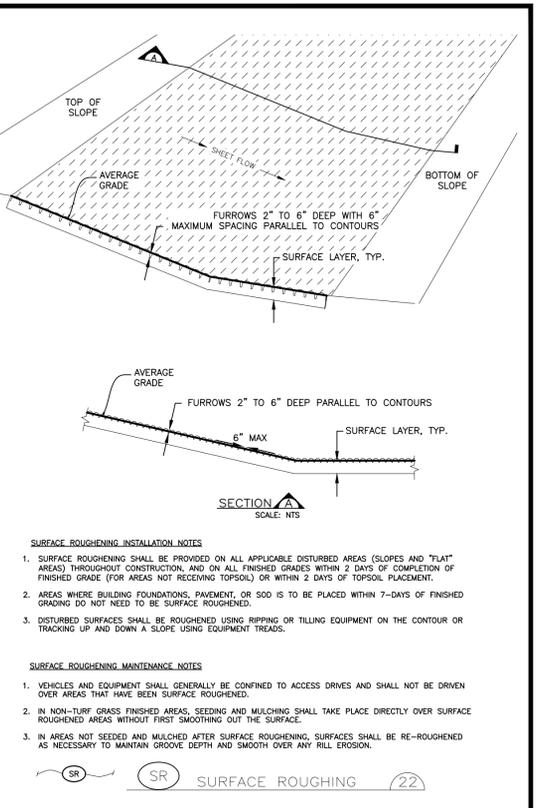
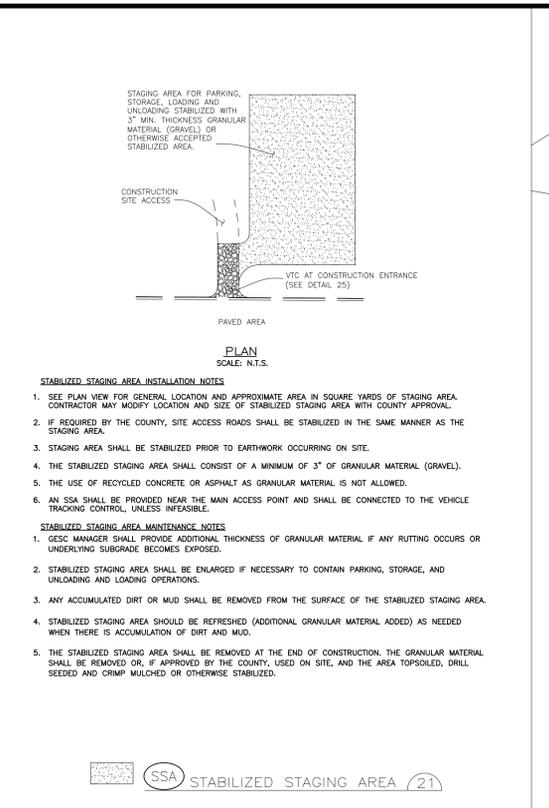
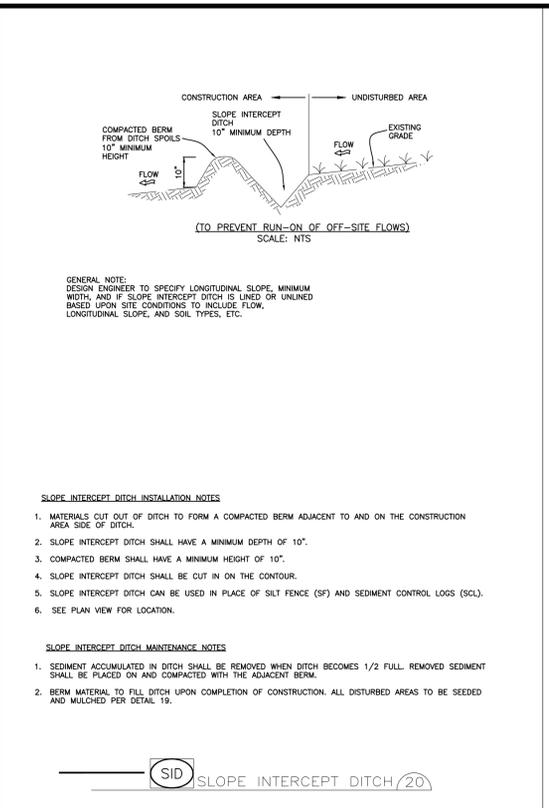
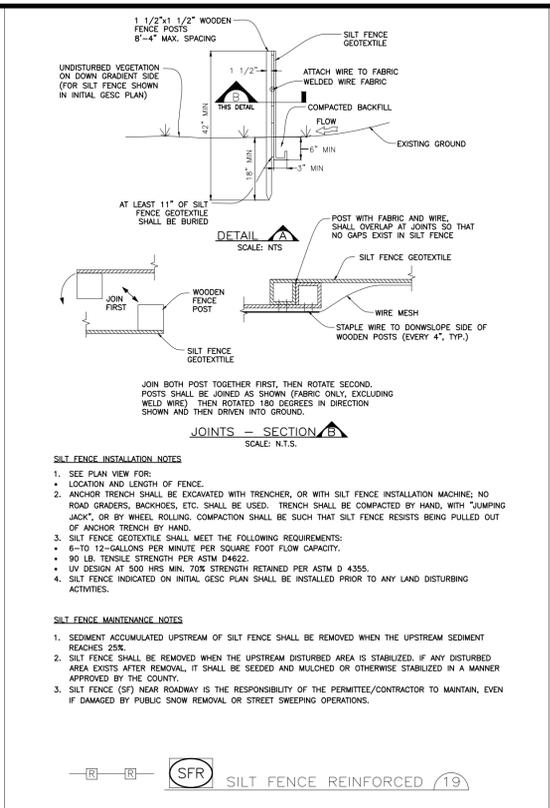
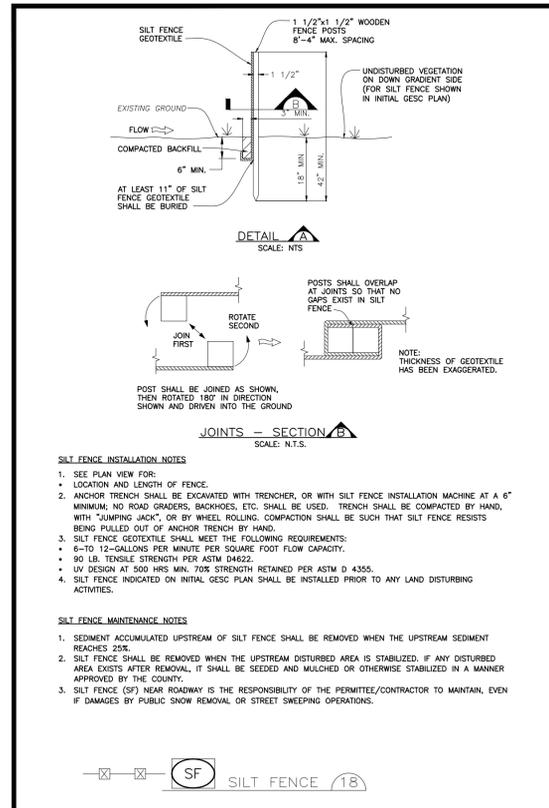
UTILITY NOTIFICATION CENTER OF COLORADO  
CALL BEFORE YOU DIG  
**811**  
Call 2 days prior to any digging, grading or excavating for the marking of underground member utilities

ARAPAHOE COUNTY  
PUBLIC WORKS AND DEVELOPMENT  
6924 S. LIMA STREET  
CENTENNIAL, CO 80112  
720-874-6500



GRADING EROSION AND SEDIMENT CONTROL  
STANDARD NOTES AND DETAILS  
REVISED OCTOBER 2025

GESC SHEET 3 OF 4



UTILITY NOTIFICATION CENTER  
OF COLORADO  
CALL BEFORE YOU DIG  
**811**  
Call 2 days prior to any digging, grading or  
excavating for the marking of underground  
member utilities

ARAPAHOE COUNTY  
PUBLIC WORKS AND DEVELOPMENT  
6924 S. LIMA STREET  
CENTENNIAL, CO 80112  
720-874-6500



GRADING EROSION AND SEDIMENT CONTROL  
STANDARD NOTES AND DETAILS  
REVISED OCTOBER 2025

GESC  
SHEET  
4 OF 4