

Plan Preparation Guide

Chapter 17

Sediment/Erosion Control Plans

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1. Sediment/Erosion Control Plans

There are eight plan sheets that provide sediment/erosion control information for a project. Distinct erosion control items have been designed for use during highway construction on S. C. Highways. Pay items to construct these sediment/erosion control items are described on each drawing. A unique pay item number is available for each item.

2. Sediment Dam and Temporary Sediment Control Structure and Basin

One plans sheet is an Erosion Control Data Sheet that provides information concerning the variable shown on the “Sediment Dam” standard and the “Temporary Sediment Control Structure and Basin” standard. The location of a “Sediment Dam” should be shown on the plan sheet using the elongated diamond in the direction of flow. This symbol can be found in the Department’s cell library. Show the location of the “Temporary Sediment Control Structure and Basin” on the plan sheet with a rectangle with the long dimension in the direction of flow. The Sediment Dam is suggested to be used to control sediment/silt of drainage areas up to ten acres and over. These erosion control items are numbered on the plans, and the numbers are transferred to the Data Sheet. The necessary information is to be provided for each individual item. When showing the sediment dam and sediment basins on plans, it will be necessary to show any additional right of way (permanent) needed to construct these items. This should be done prior to sending the plans to Right of Way. The drawings for both of these basins must be included in the final construction plans with the Erosion Control Data Sheet, as applicable. If there is a need for a temporary sediment control structure that is not shown on the drawing, please contact Road Design Office for a new pays item number. If the structure is not shown on the drawing, then you will need to revise the sheet appropriately to include all of the necessary design information. If comments are needed to be recorded on the Data Sheet, use the line or lines directly under the item being referenced. When any erosion control item is set-up in the plans for discretionary use by the Resident Engineer that the Resident Engineer may need to design in the Field, the soil types shall be provided as described on the “Erosion Control Data Sheet”.

The Sediment Dam may or may not have an excavated silt basin in front of the sediment trap riprap. If it does not, then the variable, “depth of silt basin”, will be zero and “N/A” placed in the length and width boxes. The silt basin may be drained or not drained at the Sediment Dam and must be so noted on the Data Sheet. Side slopes of silt basins may be vertical and should, also, be noted on the Data Sheet. If the outfall channel of a Sediment Dam will not need riprap protection, indicate by placing a zero under “outfall channel length” and “N/A” in the other applicable boxes. See Standard Drawing Numbers 815-2 and 815-6.

See sheet 17-6 for an example of the Erosion Control Data Sheet.

Sediment control structures and basins will be shown in the plans on a special sheet similar to Standard Drawing No. 815-2. Each basin with a sediment control structure will have its own special drawing in the plans. The special drawing will provide site specific information for only that basin and structure such as pipe type and length, slopes, structure size, etc.

The location of the sediment basin with the sediment control structure will be shown on the plan sheet and numbered to match the special drawing sheet showing the details of the basin and structure. The plan sheet will show the additional right of way, fencing, and the specific dimensions of the basin. Right of way for the basin will be shown as station-offsets referenced from the roadway mainline centerline to each intersecting point of the exterior boundary of the basin outside the roadway right of way.

Measurement and payment will be as described in Standard Drawing No. 815-2. The special drawings incorporated into the plans will use Standard Drawing No. 815-2 as a model drawing.

3. Sediment Trap for Catch Basin/Drop Inlet

“Sediment Trap for Catch Basin/Drop Inlet” is to be used in medians and at other selected catch basin/drop inlet locations. It is recommended to handle erosion for up to a ten acre drainage area or a median length and width shown on the standard drawing. This item is shown on two plan sheets. One is for the Piedmont and the other, the Coastal region. When these items are used, the soil types (coarse/fine) must be given on the Data Sheet. Suggested locations for its use should be shown on the plans, if known, and additional quantities may be shown in the inclusions to be used at the discretion of the Engineer. A Sediment Trap is comprised of two pay items, silt basin and inlet structure filter. The silt basin quantity may vary from sediment trap to sediment trap but the estimated quantity of silt basin is not to be placed on the plans at each sediment trap. The total quantity of silt basin will be shown in the inclusions and noted for Sediment Traps. The quantity of silt basin will be for the construction and the estimated clean-out of the basin. It is necessary to know the type of catch basin/drop inlet that is involved and particularly whether or not the catch basin/drop inlet is to be rehabilitated or newly constructed. Sediment Traps are not expected to be used at a curb inlet location. The type of inlet structure filter used in a Sediment Trap will be a Type A or Type B only. The total quantity of Inlet Structure Filters by type will be placed in the inclusions and noted for use in Sediment Traps. See Standard Drawing Number 815-5.

4. Inlet Structure Filters

“Inlet Structure Filters” that are necessary in the construction of a Sediment Trap may also be used alone where protection of the inlet structure is required. There are two types of filters shown on the standard drawing. Use of a certain type of filter may be shown on the plan sheet at each structure needing protection or a quantity may be placed in the inclusions for use at the discretion of the engineer, or both. If Inlet Structure Filters are desired to be used other than

in Sediment Traps, then the two quantities should be placed in the inclusions separately and noted. Cleaning- out the silt in front of an Inlet Structure Filter will be paid for as “Silt Basin” and an estimated quantity should be given in the inclusions. See Standard Drawing Number 815-4.

5. Ditch Checks

Specific locations of each “Ditch Check” is not to be shown on the plans. Locations (Sta. to Sta.) may be given as described below. Where locations are not specified, the quantities will be placed in the inclusions. In most cases, we do not recommend that they be used on final ditch grade unless outside the roadside clear zone and may be left in place. Use of ditch checks in temporary ditches while constructing embankments is recommended. In this case as the embankment is constructed, the riprap will be scattered and abandoned in the fill as permitted. Design information is found on the standard drawing to assist the Field Engineer with the spacing and ditch check height. Therefore, only a total quantity should be placed in the inclusions. When used in a roadside or median ditch on the final grade, the ditch check will normally need to be removed and the area graded and seeded. Cost to remove and dispose of the ditch check is included in its bid price. See Standard Drawing Number 815-3.

6. Rolled Erosion Control Products

Standard Drawing No. 815-1 has been revised to show “Rolled Erosion Control Product” instead of an earthen “Temporary Sediment Dam”. Rolled Erosion Control Products should be used in locations where final grade have been constructed and it is necessary to provide protection against erosion. After permanent seeding is accomplished then the Rolled Erosion Control Product is put in place. In some cases, Ditch Checks are recommended in the same locations, so a quantity of Rolled Erosion Control Product and Ditch Check may be given with quantities for each computed using the same locations. When specific locations are not determined, a quantity of each in the inclusions allows the Engineer to decide which method of protection he/she desires. The advantage of the Rolled Erosion Control Product is that it can be left in-place, but the riprap must be removed and disposed of if adjacent to the travelway. These quantities will be shown in the inclusions. Additional quantities may be given in the inclusions where locations have not been determined. See Standard Drawing Number 815-1. Quantity and location of Erosion Control Blankets and Permanent Turf Reinforced Mats (RECP’s) will no longer be placed on the plan sheet. Sediment Dams will still need to be shown and numbered on the plan sheet matching the number and location of the ECDS but will be shown on the inclusion sheet. Please see page 3-11 for a listing of Rolled Erosion Control Product pay items.

7. Silt Fence

“Silt Fence” is found on Standard Drawing No. 815-1. The location of this item will not be shown on the plans. The quantity estimated will be placed in the inclusions.

8. Baled Straw/Sediment Tubes/Curb Inlet Filters

The use of baled straw is no longer an acceptable sediment or erosion control method. Baled straw should not be placed in the quantities in future projects.

In lieu of Baled Straw, Sediment Tubes (Standard Drawing No. 815-7) may be used in both curb and gutter sections and ditch sections. The use of Sediment Tubes is more defined than Baled Straw, but can be used in any condition where concentrated flows need to be filtered. Typically, Sediment Tubes come in 10-foot lengths and can be sewn together, end-to-end, in the field. Computation of the quantity of Sediment Tubes is by the linear foot in increments of 10 linear feet installed as shown on the Standard Drawing. Twelve inch diameter Sediment Tubes are to be specified in front of catch basins to filter run-off going into the catch basin weep hole. The Sediment Tube can be placed on the subgrade, graded aggregate base or the asphalt plant mix. In all cases, the tube has to be staked or stabilized. Generally, only one 10-foot section will be needed at a catch basin.

Twenty inch diameter Sediment Tubes are generally specified for ditch protection. Standard Drawing No. 815-7 gives the details on a typical ditch installation; however, the number and spacing of these installations will be dependent on the grade of the ditch and the volume of expected flow. The Hydraulic Section should provide this information on a case-by-case basis.

Sediment Tubes may be shown in the inclusions on the "Construction Note Sheet". Explanations should accompany the pay items added to the inclusions to describe where the designer intends the Sediment Tubes to be used. When specifying the use of the 20-inch diameter Sediment Tubes, the designer may have to show the spacing and locations of the tubes. When the Sediment Tube is shown on the plan sheet, it should be labeled with the quantity and not placed in the inclusions.

Curb Inlet Filters may be added to the plans where filtration of storm water run-off before it enters the catch basin is desired. The Curb Inlet Filter is laid in the gutter in front of the catch basin covering the throat as shown in Standard Drawing No. 815-7. The designer will determine the quantity by each Curb Inlet Filter needed for each type curb-style catch basin. In general, the Curb Inlet Filter will only be used on catch basins Type 16, 17, and 18.

9. Temporary Slope Drains

"Temporary Slope Drains" may be used but their locations, also, are not shown on the plans. Place the estimated quantity in the inclusions. There is no standard drawing that details "Temporary Slope Drains".

Other erosion control items are available as shown on Standard Drawing 815-1 and other special drawings that are to be included in the plans.

10. Erosion Control Data Sheet

Certain information is needed in the plans to enable the construction personnel to successfully complete the erosion control responsibilities of the project. That information is provided on the Erosion Control Data Sheet (ECDS) which is determined by the Hydraulic Engineering Section. The layout of the ECDS is shown on the following page.

In the future, the Hydraulic Engineering personnel will provide ECDS on an Excel spreadsheet formatted to be input to a MicroStation ECDS border sheet by Road Design personnel. The ECDS border sheet is named `ecds_border.dgn`. The Excel spreadsheet may be provided over the network or sent via email. Keep the Excel ECDS file in your project files. If changes are needed, the Excel file can be changed which will automatically update the MicroStation file. A tutorial has been created to show how to place the Excel file on the MicroStation border sheet. It can be found on the CADD Support page under Documentation on the Road Design intranet web page.

Only Sediment Tubes, 20" diameter, to be used in ditches will be shown on the ECDS. Location on the plan sheet is not necessary, unless needed for clarity. The 12" diameter Sediment Tubes are not to be shown on the ECDS.

Additional quantities of erosion control items may be placed in the inclusions. A description of the intended use of each inclusion item should be as specific as possible.

EROSION CONTROL DATA SHEET

FED. RD. DIST. NO.	STATE	COUNTY	FILE NO.	ROAD/ROUTE NO.	SHEET NO.
3	SC.				

RECEIVING WATERS						SOIL TYPES				
OUTFALL DITCH		NAME OF RECEIVING WATERS	NAME OF ULTIMATE RECEIVING WATERS		NAME OF RECEIVING WATERS	NAME OF ULTIMATE RECEIVING WATERS	ROAD / ROUTE	STATION TO STATION	SOIL PARTICLE SIZE (COARSE / FINE)	ZONE
STATION	SIDE		STATION	SIDE						

TEMPORARY EROSION CONTROL BLANKET										
ROAD / ROUTE	STATION TO STATION	SIDE	DEPTH OF BLANKET (FT)	SLOPES @ : 1		DITCH BOTTOM WIDTH (FT)	CLASS	CLASS A (MSY)	CLASS B (MSY)	CLASS C (MSY)
				FRONT	BACK					
TOTALS										

SEDIMENT DAM														NOTE: NO INCISEMENT IS NEEDED IN ANY OF THE DITCHES	
NO	STATION	SIDE	DRAINED OR NOT DRAINED	LENGTH OF SILT BASIN	WIDTH OF SILT BASIN	DEPTH OF SILT BASIN	SIDE SLOPE OF SILT BASIN	SPILLWAY WIDTH	SPILLWAY DEPTH	TOTAL HEIGHT TO SPILLWAY	SEDIMENT STORAGE VOLUME	RUNOFF STORAGE VOLUME	OUTFALL CHANNEL WIDTH	OUTFALL CHANNEL DEPTH	OUTFALL CHANNEL LENGTH
TOTALS															

SEDIMENT TUBES IN DITCHES						
ROAD / ROUTE	STATION TO STATION	SIDE	AVERAGE LENGTH	SPACING (FT)	TOTAL	COMMENTS
GRAND TOTAL						

PERMANENT TURF REINFORCED MAT											
ROAD / ROUTE	STATION TO STATION	SIDE	DEPTH OF MAT (FT)	SLOPES @ : 1		DITCH BOTTOM WIDTH (FT)	TYPE	TYPE 1 (MSY)	TYPE 2 (MSY)	TYPE 3 (MSY)	TYPE 4 (MSY)
				FRONT	BACK						
TOTALS											