DESIGN SUMMARY TABLES
FOR
EROSION AND SEDIMENT CONTROL AND STORMWATER MANAGEMENT PLAN REVIEWS

CENTRAL VIRGINIA EROSION AND SEDIMENT CONTROL COMMITTEE
CVESCC

AMHERST COUNTY
APPOMATTOX COUNTY
BEDFORD COUNTY
CAMPBELL COUNTY
LYNCHBURG CITY

Definition: Design Summary Table - a standardized table which summarizes design parameters and resulting construction parameters for a variety of Erosion & Sediment Control (ESC) and Stormwater Management (SWM) features.

Central Virginia Erosion and Sediment Control Committee - The CVESCC consists of Erosion and Sediment Control Managers, Plan Reviewers, and Inspectors from Amherst, Appomattox, Bedford and Campbell Counties and the City of Lynchburg. We have met seven times since April attempting to coordinate and standardize ESC administrative procedures.

The committee has developed a series of standardized tables to summarize design parameters and construction parameters for a variety of Erosion and Sediment Control and Stormwater Management features frequently found on plans. Since basic design parameters are often missing, or are lost in a series of difficult to understand calculations, and some of the construction parameters required to build these features are frequently missing from plan sheets, we as a group have decided to standardize and simplify how we will require this information is to be presented. This should assist both the review and construction processes.

Design Summary Tables - Design Summary Tables will be required on any submitted plan sheet which includes any of the following features:

Stormwater Feature	Alpha Identifier
Temporary Sediment Trap	ST
Temporary Sediment Basin	SB
Temporary Slope Drain	TSD
Stormwater Conveyance Channel	SCC
Outlet Protection	OP
Rip Rap	RR
Rock Check Dam	CD
Level Spreader	LS
Temporary Vehicular Stream Crossing	SC
Utility Stream Crossing	USC
Dewatering Structure	DS
Detention Basin	DB
Stormwater Drainage Pipe	P
Drainage Area	DA

The CVESCC standard Design Summary Table for each of these features will consist of the list of required parameters in the first column, and one additional column for each occurrence of that type feature found on the plans. The list of required parameters for each of these features is found on the attached list.

Each occurrence of the feature must be labeled on the plan with a unique identifier. The identifier will consist of a standard alpha identifier followed by a dash followed by a numeric counter (no spaces). In many cases the alpha identifier will be the standard identification for E&S features as specified by the Virginia Department of Conservation and Recreation in the Virginia Erosion and Sediment Control Handbook.

For example if a plan set includes four instances of outlet protection, these occurrences shall be identified on the plan drawing as OP-1, OP-2, OP-3 and OP-4. These identifiers should be located inside the standard circle used for ESC features. Since the addition of a numeric counter will create a longer identifier, an oval or ellipse may be more appropriate than a circle. On the plan sheet a table will be required listing the design and construction parameters for Outlet Protection features in the first column followed by four columns indicating the respective value for each parameter.

Sample Table Format

OUTLET PROTECTION SUMMARY TABLE				
ID	OP-1	OP-2	OP-3	OP-4
DESIGN FLOW *				
TAILWATER DEPTH				
DISCHARGE VELOCITY				
RIP RAP GRADATION				
APRON LENGTH				
APRON WIDTH(S)				
SIDE SLOPES				
APRON DEPTH				

This example table will help the plan reviewer quickly know what design parameters were used for sizing the outlet protection and quickly supply the contractor with the required size information for construction which has been frequently missing from submitted drawings.

Be sure to include units for all entries either within each individual cell or noted in the first column along with the parameter name.

Each feature which requires a 'design flow' in its summary table must also have an entry in the Flow Summary Table.

Flow Summary Table

Many of the features to be summarized in the Design Summary Tables require a 'design flow' to be properly sized. Since the design flow itself also requires a series of input parameters in order to be calculated, all of the basic information such as drainage area, runoff factor, time of concentration, etc. could also have logically been included in many of the Design Summary Tables. Instead however, the committee has elected to not require this information in the individual feature tables but to combine all of these parameters into a single Flow Summary Table and require only the resulting 'design flow' to be transferred into the individual feature table. This allows the reviewer to quickly and easily compare the design flow calculations for all types of features in a single location.

Thus, along with the above sample there would also need to be at least four columns in the Flow Summary Table indicating the input parameters for the four Outlet Protection features. See below.

FLOW SUMMARY TABLE						
FEATURE ID	OP-1	OP-2	OP-3	OP-4	etc.	etc.
DESIGN EVENT FREQUENCY						
RAINFALL INTENSITY						
POST DEVELOPMENT						
DRAINAGE AREA ID(S)	DA-1	DA-2+3	DA-4+5+6	DA-7	DA-8+9	DA-10+11+12
TOTAL DRAINAGE AREA SIZE						
TIME OF CONCENTRATION						
COMPOSITE RUNOFF FACTOR						
DESIGN FLOW						
PRE DEVELOPMENT (if needed)						
DRAINAGE AREA ID						
TOTAL DRAINAGE AREA SIZE						
TIME OF CONCENTRATION						
COMPOSITE RUNOFF FACTOR						
DESIGN FLOW						

Drainage Area Map - A Drainage Area Map should be included in each ESC Plan set. To prevent clutter, it may often need to be a separate sheet, probably at the same scale as the site plan. The Drainage Area Map should delineate the drainage area to each ESC and SWM feature for which the design requires a drainage area. Be sure to show all off-site drainage areas on the Drainage Area Map.

Frequently the various ESC and SWM features will have drainage areas which are subsets of one another. To prevent confusion, the labeling of drainage areas should not involve overlapping areas. Each individually delineated area should be labeled with its own ID and its own associated area in acres. Whenever cumulative drainage areas to certain features occur, these drainage areas will be expressed as sums of the smaller areas.

For example a system of three inlets, three consecutive pipes, and outlet protection at the end might have pipe P-1 with drainage area DA-1, pipe P-2 with drainage area of DA-1+2, pipe P-3 with drainage area DA-1+2+3, and outlet protection OP-3 with drainage area DA-1+2+3.

Each entry in the Design Flow Summary table must correspond with a defined and labeled drainage area or a combination of drainage areas on the Drainage Area Map.

ESC Narrative - Virginia Erosion and Sediment Control regulations require an ESC Narrative to be included with each ESC Plan. Such narratives have been found both printed on the plan documents or included with the plan documents as a separate 8-1/2

by 11 inch package. Due to the difficulty in keeping separate smaller documents associated with larger plan documents the CVESCC has elected to require that all ESC Narratives be included on the plan documents.

Computer Outputs and Hand Calculation Sheets - For many of the simpler design calculations, the Design Summary Tables will reduce or eliminate the need to include calculation packages with design plan submittals. However in more complex cases such as computer calculations for integrated pipe networks, submittal of separate calculation packages will still be required. Be sure **each calculation sheet is labeled** to reference the appropriate occurrence of the plan feature. For example, make sure that computer routing outputs for DB-1 are clearly labeled and distinguished from calculations for DB-2, or that pipes in an integrated network are labeled with the same identifiers in both the calculations and on the plans.