

DelDOT Stormwater Management (SWM) Report Format

Interim Report for Review (all electronic)

Submittal Items (description of each is shown below):

1. PDF:
 - a. Title Page
 - b. Project Narrative
 - c. Credit/Debit Table
 - d. Proposed Stormwater Management Measures
 - e. Project Level DURMM (PLD) Run
 - f. Limit of Disturbance (LOD) Map
 - g. Tailwater Analysis at the Outfalls
 - h. Pre-Developed Drainage Area Map (FYI - this is the drainage area being used for calculations, not the LOD area)
 - i. Sub drainage areas clearly marked
 - ii. Tc paths broken down and shown in its component parts
 - iii. HSG boundaries
 - iv. POA's
 - i. Post-Developed Drainage Area Map (FYI - this is the drainage area being used for calculations, not the LOD area)
 - i. Sub drainage areas clearly marked
 - ii. Tc paths broken down and shown in its component parts
 - iii. HSG boundaries
 - iv. POA's
2. HydroCAD File(s)

Final Report for Permanent Files

This will also be all electronic and there may be more than one final report submittal if the initial submittal is not complete or contains errors as per the direction of the Stormwater Engineer. So, the submittal will be a final report along with a final HydroCAD file(s).

The stormwater management report shall be assembled into distinctive sections. The report should include all data, drawings, charts, maps, calculations, and explanations needed which lead to a clear understanding of the studies performed, methods and criteria used, results obtained, and conclusions reached. For any calculations presented (not explicitly done in the HydroCAD model), at least one example must be shown in its' entirety. When writing out this report, take it from the perspective that anyone not knowing anything about this project would be able to read this report and easily understand the stormwater management aspects. This report shall be organized as follows:

Title Page

At a minimum show the DelDOT Project Name, DelDOT Contract Number, Date, DelDOT Section or Consultant Name, SWM Designer's Name, Engineer of Record's Name and PE Stamp, Listing of DelDOT SWM Facility Number(s)

Table of Contents

Project Narrative

Provide a brief summary of the project location and scope.

Credit/Debit Table (example)

Overall Credit / Debit for Project	
<u>Debit</u>	<u>Credit / Debit (cf)</u>
PLD	50,824
<u>Credit*</u>	
Facility #1230	5,365
Facility #1231	35,679
Facility #1232	10,214
Total:	+434

*Use as many rows as needed for each BMP and assigned De/ DOT facility numbers will be used for final report submittal.

Proposed Stormwater Management Measures

Discuss succinctly the overall project stormwater management approach and then break it down per drainage area. If there are any special overall design considerations for this project (i.e. flooding in certain areas, drains to existing SWM facilities), that can be explained in this section as well. For the individual areas, discuss the existing site conditions and which management measures were chosen. Provide a narrative of the stormwater management strategy based on physical site constraints such as topography, soils, water table, etc., and regulatory requirements. Also discuss how the Resource Protection event (RPv), Conveyance Event (Cv), and Flooding Event (Fv) are being handled for regulatory compliance. If the proposed measures deviate from the preferred methods in accordance with the latest update of the Delaware Sediment and Stormwater Regulations, include some discussion and justification as to why the preferred methods were ruled out.

Appendices

Appendix A – Background Information (for overall project)

Background information will include much of what was provided in the Concurrence Meeting as well as additional information obtained during the design process. Provide the project location with the below information marked as appropriate. Multiple sets of needed information can be shown on the same sheet as long as it is easily distinguishable as determined by the Stormwater Engineer.

List of required information (if applicable):

- Aerial map overlaid with proposed alignment

- Project boundary showing streams and water features
- Existing 2' contours
- Tax ditches
- Wellhead protection areas
- Aquifer recharge areas
- 2017 land use / land cover
- Hydrologic soil groups
- Wetlands
- Runoff reduction feasibility
- Depth to water table
- Existing downstream conveyance and agreed upon POA(s)
- Documentation of existing structures (size, type, etc.).

GIS Web application link where most information can be found: [DSSR GIS Web Application](#)

Additional Information Required

PLD containing the following sheets (C.A.RCN, LOD, RPV, DURMM Report)

LOD delineation for the PLD at an easily visible scale and marked with pervious and impervious areas. (FYI – the LOD has absolutely nothing to do with drainage areas.)

Appendix B, C, D, etc. – Individual BMP Information

Each individual BMP will have its' own appendix and everything concerning that BMP will be covered in that section. This includes but is not limited to: individual BMP contributing drainage area map with appropriate components shown (note: may not always be needed, but would be if it is not easily distinguishable from an overall drainage area map as determined by the Stormwater Engineer), Limit of Disturbance (LOD), Outside Limit of Disturbance (OLOD), point of analysis (POA), RPv, Cv, Fv, soil boring information, infiltration test information, DURMM sheets (if applicable), etc.

When designing retention and/or detention facilities i.e. wet ponds, dry ponds, or infiltration basins, the below criteria shall be included in the individual BMP appendix as appropriate. This is to include all calculations and drawings and be easily distinguishable as determined by the Stormwater Engineer.

- Foundation cutoff core and embankment design
- Anti-floatation check for pond outlet structure
- Sizing and spacing of anti-seep collars
- Riprap protection of outflow areas from each BMP outlet structure
- Sediment forebay sizing

Printed sheets needed from HydroCAD (minimum):

- This would include RPv, Cv, and Fv events
- Under 'Project Report Items':
 - Routing Diagram

- Area Listing
- Ground Covers
- Pipe Listing
- Node Listing
- Totals
- Under ‘Node Report items’
 - Summaries
 - Wizards
 - Hydrograph Plots
 - Hydrograph Table (if designing extended detention (ED) facility)
- Under ‘Options’
 - 3D Charts
 - Shrink Tables (although this may be unchecked if designing ED facility)
 - Print in Color

Additional Appendices for Points of Analysis (POA’s)

Use the ‘*DelDOT Cv and Fv Compliance Flowchart*’ to determine if the project’s POA’s will comply with the appropriate storm events. The flowchart should not be reproduced as part of this report. All hydrologic and hydraulic computations for water quantity shall be completed and necessary paperwork submitted. Drainage computations will be as described in Chapter 6 of the *DelDOT Road Design Manual*. All material used to support Cv and Fv compliance i.e. calculations, drawings, maps, etc. shall be printed out and attached in the Appendix and be easily distinguishable as determined by the Stormwater Engineer.

SWM Sheets from Plans

All stormwater management facilities as shown in the plans will also be shown in this appendix. If the plans do not have separate stormwater management plan sheets, then the appropriate construction plan sheet(s) will suffice.