Antrim Township Stormwater Management

Reviewing Engineer:
Dewberry-Goodkind, Inc.

Review Process

- Primary Objective
  - To confirm that the stormwater management plan is in compliance with Chapter 126-Antrim Township Stormwater Management Ordinance
- Administrative Review
  - 7 days after receipt of complete SDLD submission
- Technical Review
  - 14 days after receipt of administratively complete stormwater management plan

Administrative Review

- Determine that design calculations and plan elements including notes, details, etc. are provided in the submission, sufficient to complete a technical review
- Administrative Review Checklist
  - Chapter 126 - Antrim Township Stormwater Management Ordinance
- Administrative review appears to be the most time consuming in the review process.

Administrative Review

- Common Deficiencies
  - Standard notes as required in Chapter 126
  - Calculations for ground water recharge and water quality volumes provided by BMPs
  - Calculations showing adequate erosion protection provided at open channel points of discharge
  - Calculations indicating that proper erosion control measures have been provided to protect storage facility spillway and embankment against erosive effects of accelerated discharge
  - Detailed soils evaluation including permeability, depth to bedrock and water table, susceptibilty to sinkhole formation (bedrock type)
  - Address runoff from significant pollutant producing sources and provide pre-treatment (in carbonate areas)

Administrative Review

- Common Deficiencies
  - Address prohibited connections and prohibited discharges in SWM plan (report or plans)
  - Table (or other means) showing type and amounts of impervious cover proposed, provided on the plan
  - Hydraulic capacity of open channels and storm sewers provided on the profiles
  - Clearly identify the owner of the SWM facilities on the site

Technical Review

- Technical Review Checklist
- PADEP Stormwater Best Management Practices Manual, Dec. 2006
- PADEP Erosion and Sediment Pollution Control Program Manual, March 2000
- TR-55 Technical Release – Urban Hydrology for Small Watersheds
- Pennsylvania Handbook of Best Management Practices for Developing Areas
- 2000 Maryland Stormwater Design Manual

Technical Review

- Determine that design calculations are correct, that plan elements meet the requirements of the Ordinance and best engineering practice, that results of the calculations are correctly depicted on the plan elements
- Technical Review Checklist
  - Chapter 126 - Antrim Township Stormwater Management Ordinance

Technical Review

- PADEP Stormwater Best Management Practices Manual, Dec. 2006
  - http://www.depweb.state.pa.us/watershedmgmt/cw
  - Design calculations, specifications, maintenance of BMPs
  - Site stormwater calculations and methodology
    - Rational Method, NRCS Method (TR-55 or TR-20)

Technical Review

- PADEP Erosion and Sediment Pollution Control Program Manual, March 2000
  - Open Channel Design
  - Anti-seep Collar Design
  - Riprap Apron Outlet Protection Design

Technical Review

- TR-55 Technical Release – Urban Hydrology for Small Watersheds
  - Hydrologic Soil Group designation for various soils
    - HSG designation as provided in the Web Soil Survey will be accepted, provided that the designer examine the existing site and provide evidence that the existing soil meets the description of the HSG
  - Time of concentration/Travel time calculations

Technical Review

- Pennsylvania Handbook of Best Management Practices for Developing Areas
  - http://www.pacd.org/products/bmp/bmp_toc.htm
  - Additional reference for BMPs if PADEP Stormwater BMP Manual does not provide sufficient design information

Technical Review

- 2000 Maryland Stormwater Design Manual
  - http://www.mde.state.md.us/Programs/WaterPrograms/SedimentandStormwater/stormwater_design/index.asp
  - Additional reference for BMPs if PADEP Stormwater BMP Manual does not provide sufficient design information

Technical Review

- Miscellaneous Items
  - 24-hour storm event rainfall depths for use in NRCS methods
    - Figure B-3 in Exhibit 2 of Chapter 126
    - Will accept more restrictive rainfall intensities (rational method) or rainfall depths, if they are required by other reviewing agencies (PADEP, Conservation District)

Technical Review

- Miscellaneous Items
  - Design area for groundwater recharge BMPs is the drainage area to the BMP
  - Design area for water quality volume is the total site area.
    - Water quality volume is not required for offsite drainage areas that discharge onto the site.