Sequence of Construction

Bureau of Clean Water
March 10, 2026

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What is a Construction Sequence?

- Required component of E&S and PCSM Plans
- Step-by-step progression of earth disturbance activities
- Specifies the order of installation for BMPs/SCMs

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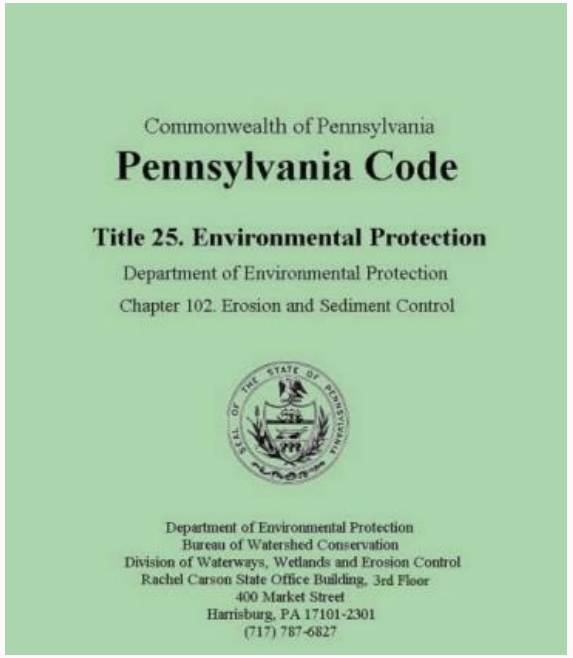
DEP Regulatory Framework

- 25 Pa. Code §102.4(b): Erosion and Sediment Control Requirements

- 25 Pa. Code§102.8: PCSM Requirements


Commonwealth of Pennsylvania

Pennsylvania Code

Title 25. Environmental Protection

Department of Environmental Protection

Chapter 102. Erosion and Sediment Control

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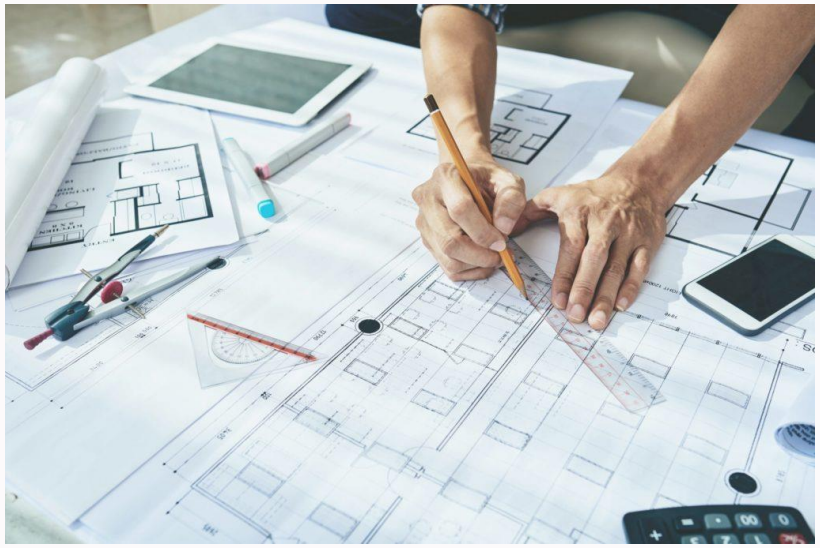
DEP Regulatory Framework

Permittees & Designers must:

- Develop and implement E&S and PCSM Plans
- Install BMPs prior to/during earth disturbance
- Minimize the extent and duration of earth disturbance
- Permanently stabilize disturbed areas



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Role of Sequence of Construction

- Minimizes erosion and sediment pollution
- Site-specific
- Provides direction to contractors/operators on the order activities should occur
- Explains BMP/SCM installation in relation to earthmoving and stabilization
- Unapproved deviations = violations
- Planning should involve contractors when possible

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Integration of E&S & PCSM Plans

E&S BMPs protect PCSM SCMs during construction

Construction sequencing impacts to SCMs

Temporary BMPs must remain until SCMs are stabilized and functional

Critical Stages need to be clearly defined

Proper sequencing makes permit terminations easier

E&S and PCSM Plans must be developed and implemented as a single system.

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Sequence of Construction

- All earthmoving aspects
  - Grading
  - BMP/SCM Installation & Removal
- Minimal building construction details
- Conditions for stabilization
  - 70% uniform vegetative cover
- Conversion sequence for E&S to PCSM
- No maintenance information

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Licensed Professional Role

- Design logical sequences
- Identify and oversee critical stages of construction
- Proactive construction planning
- Communicate clearly with contractors
- Approve changes formally

Compliant + Constructible

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Typical Construction Sequence

CONCEPTUAL OUTLINE FOR BMP SEQUENCING

1. Field-mark limits of disturbance and environmentally sensitive areas (including steep slopes, riparian buffers, wetlands, springs, and floodways)
2. Installation of Rock Construction Entrance(s)
3. Installation of perimeter controls
   a) Access Roads
   b) Temporary/Permanent Stream Crossings
4. Surface Water Diversion
   a) Diversion Channels and Berms
   b) Stabilization of Channels and Berms

Permittee must notify DEP/CDD at least 3 days prior to commencing bulk earth disturbance

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Typical Construction Sequence

5. Solids Separation BMPs
   - a) Sediment Basins
     - (1) Sediment Barriers
     - (2) Conveyance from Outlet Structures to Surface Water
     - (3) Principal Spillway and Energy Dissipater
     - (4) Earthwork to Construct Sediment Basin
     - (5) Emergency Spillway and Lining
     - (6) Stabilization of Basin and of Areas Disturbed to Construct Sediment Basin
   - b) Sediment Traps
     - (1) Conveyance from Outlet Structures to Surface Water
     - (2) Construct Sediment Trap
     - (3) Stabilization of Trap and of Areas Disturbed to Construct Sediment Trap

6. Collection of Site Runoff for Treatment
   - a) Collector Channels, Waterbars, Broad-based dips, etc.
   - b) Stabilization of Channels, Waterbars, Broad-based dips, etc.

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Typical Construction Sequence

7. Site Earthwork
   - a) Grubbing
   - b) Excavations
   - c) Fills with incremental stabilization
   - d) Construction of Buildings, Roadways and Other Structures
   - e) Site Utility Construction

8. Permanent Stabilization
   - a) Replacement of Topsoil
   - b) Permanent Seeding
     - (1) Soil Amendments
     - (2) Seed Application
     - (3) Mulch and/or blanketing
   - c) Crushed Aggregate Surfaces (Apply as soon as road or parking lot surfaces are graded)
   - d) Paved areas

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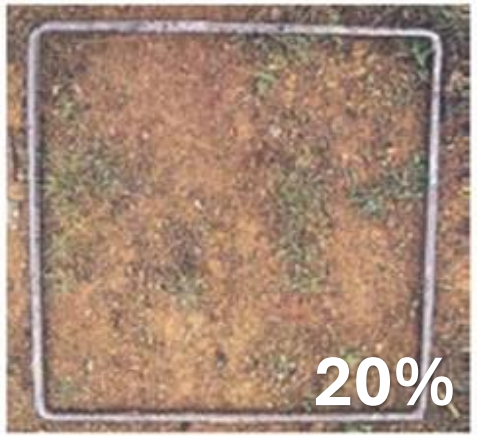
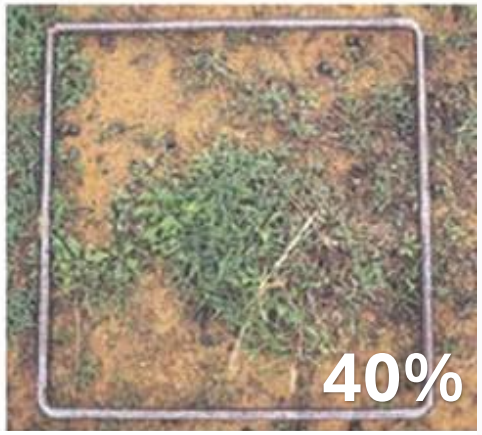
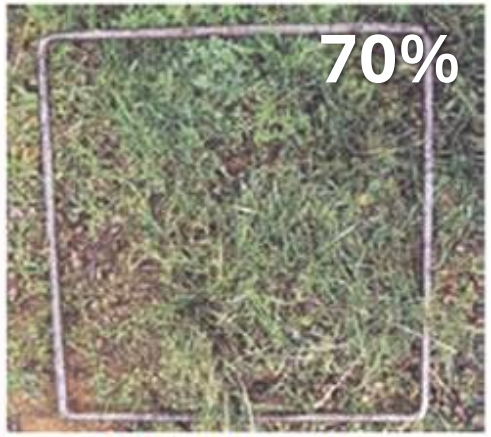
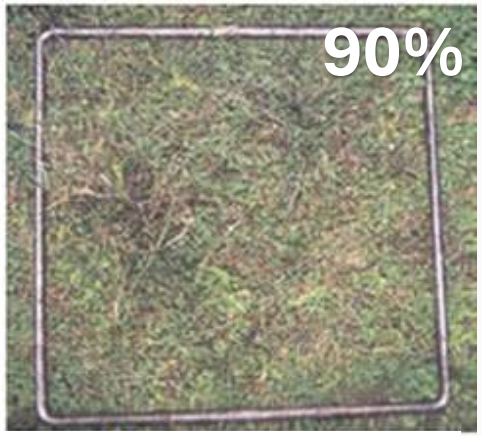
Typical Construction Sequence

9. Removal/Conversion of Temporary Sediment Pollution Controls
   a) Basins and Traps conversion/removal
   b) Removal of Sediment Barriers
   c) Removal of Temporary Diversion Channels/Berms
   d) Stabilization of disturbed areas









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Designing for Partial Termination

- Phase earth disturbance areas independently where feasible.
- Design SCMs to function independently by drainage area.
- Provide clear stabilization benchmarks per phase.
- Avoid sequencing that ties NOT to full build-out.
- Include partial NOT completion in the sequence.

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Examples of Failed Sequencing

- Earth disturbance initiated prior to installation of BMPs
- Sediment basins constructed after mass earthmoving
- Channels installed with no stabilization
- Inactive areas not stabilized
- Temporary BMPs removed prior to permanent stabilization

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Example #1

A site is fully cleared and grubbed before the sediment basin is installed. Heavy rain occurs, overwhelming the perimeter controls.

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Example #1

Assessment:

- Failure to implement E&S BMPs prior to earth disturbance
- Sediment discharge to Waters of the Commonwealth

Consequences:

- Enforcement Action
- Costly emergency basin installation

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Example #2

A site has been final graded, but stabilization is postponed due to scheduling conflicts. Exposed soils remain for several weeks.

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Example #2

Assessment:

- Failure to stabilize disturbed areas within required timeframes
- Increased potential for accelerated erosion

Consequences:

- Project delays
- Increased repair costs
- Possible major pollution events
- Repeated violations

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Example #3

Real-World: Major Roadway Project

- Practical changes are sometimes needed
- Contractors may order their work differently than the Designer

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Example #4

Real-World: Pipeline Project

- Can’t construct if you can’t access the site properly
- Fill/Spoil locations need to be properly accessible

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Sequence Changes & Amendments

- Discuss sequence constructability at pre-construction meeting
- VSIR should be used identify issues.
- Rework & retrofits may require permit amendments.
- Notify DEP/CCD as soon as possible of any changes needed to the plan or sequence of construction.

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Risk and Cost Management

- Reinstallati
- Emergency
- Constructi
- Fines and e

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Key Takeaways

- Sequence of construction is a necessity, not a formality
- Provides a roadmap for efficient, compliant construction
- One step out of order can cause failure
- Proper sequencing saves time and money

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The Department of Environmental Protection's mission is to protect Pennsylvania's air, land and water resources and to provide for the health and safety of its residents and visitors, consistent with the rights and duties established under the Environmental Rights Amendment (Article 1, Section 27 of the Pennsylvania Constitution).