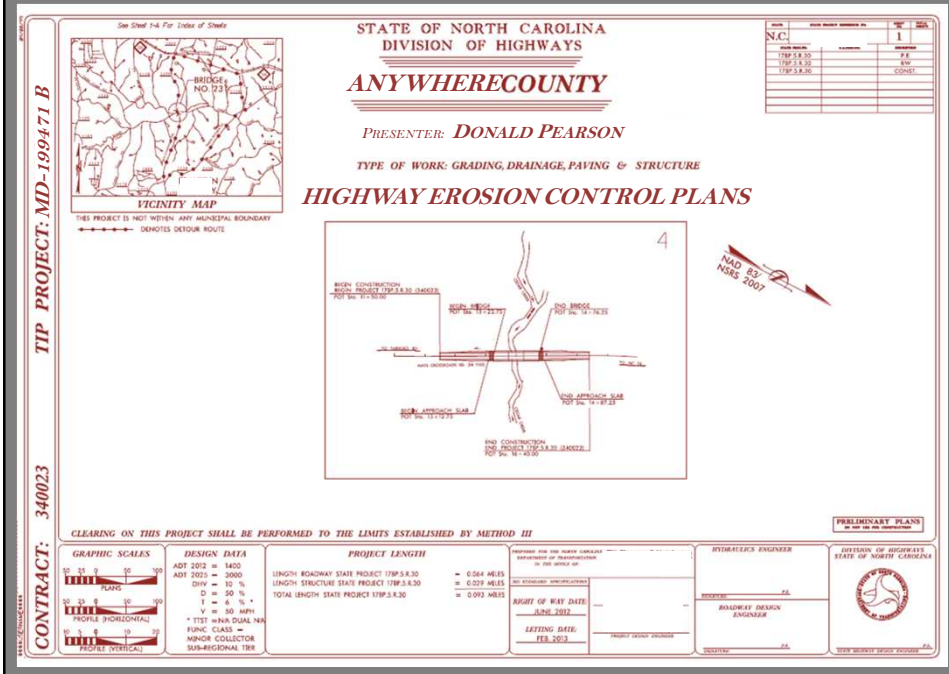


Field Operations Feedback

"… include sections of special sediment control fence outlets where long runs of silt fence are designed…"

"… ensure plans are formatted and packaged properly with Title sheet, detail sheet, soil stabilization (matting) sheet, clearing and grubbing sheet, final grade sheet, and reforestation sheet all included in submittal…"

"… include supporting calculations…"

"…suggest impervious dike, cofferdams, and turbidity curtains when footings or bulkheads are to be removed from existing stream or along stream bank. May be easiest to include as incidental to structure removal…"

"…overuse of PSRM is a concern. Its not the easiest product to grow vegetation through…"

Field Operations Feedback

"...they have taken the wattle barrier BMP and ran with it. I suggest there be some restrictions on its use like situations where clearance under bridge makes silt fence posts difficult to install/remove ..."

n additional construction ts to shift large sediment basins under fill slopes so they can nd function during mass grading ns. It seems the majority of our problems occur when we remove basins prior to establishing permanent vegetation on slopes..."

"...it would be beneficial to know what the drainage areas are for sediment basins. Adding some polygons on submitted topo maps would help us understand design approach..."

"... sediment storage between Clearing/Grubbing and Final Grade Phase is an issue on Design Build Erosion Control Plans..."

"... I wish they would use a heavier line weight for EC devices. My eyes aren't what they once were and I'm having to use a magnifying glass at times..."

"... my biggest concern is location of EC measures without consideration of permitted areas. Are EC designer and individual obtaining permits communicating?"

Field Operations Feedback

"...suggest wetland files be added to erosion control plan sheets to help show proximity of these areas to erosion control BMPS..."

"...can some type of SDO (storm discharge outfall) designation be listed with appropriate EC devices on plan sheet? It would help with NPDES documentation..."

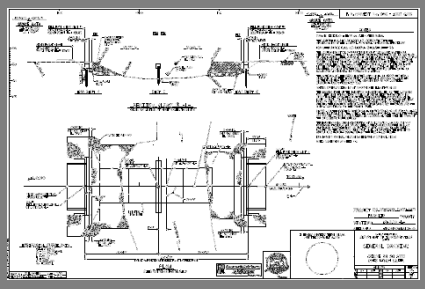
"... careful with arbitrarily designing silt fence in wetland areas. It's unlikely to function properly if there is standing water in wetland..."

NCDOT Erosion and Sediment Control Design Guidelines and Tools

- **Low impact Bridge Design**
- **Reclamation Plan Submittals**

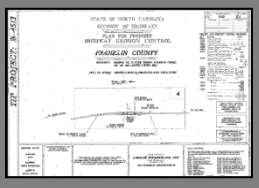
Low Impact Bridge Design

- EC plan sheets
- Erosion Control Plan and Permit Drawing
- Selecting the proper Erosion and Sediment Control BMP
- Including the proper Erosion and Sediment Control BMP quantity
- Including the proper Special Provisions

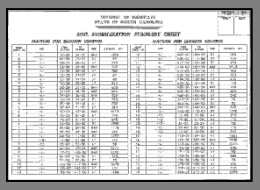


EC PLAN SHEETS

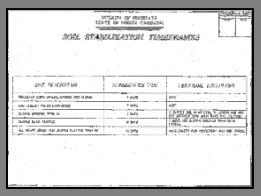
Title Sheet



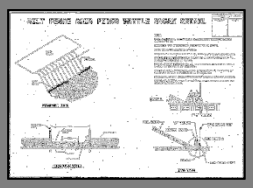
Soil Stabilization

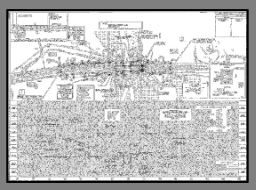


Soil Stabilization Time Frame



BMP Details



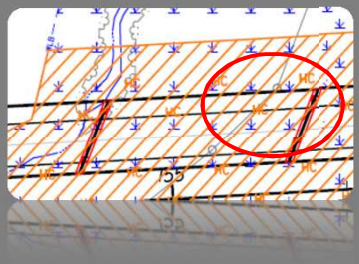


EC Plan Sheet(s)

Erosion Control Plan Design in Permitted Areas

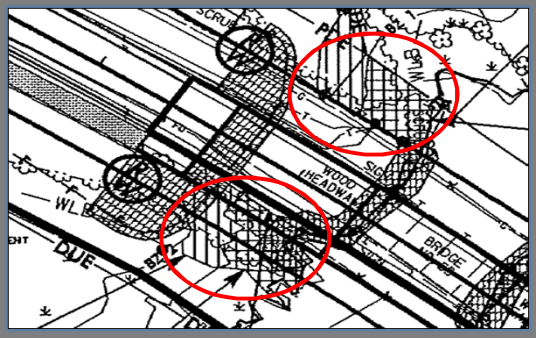
Mechanized Clearing - allows soil inversion associated with removal of trees/stumps, but does NOT allow excavation or fill. Placement of Erosion and Sediment Control measures in Mechanized Clearing zone is considered fill (temporary) and should be accounted for.

Hand Clearing - NO soil inversion associated with removal of trees allowed. Stumps are not authorized for removal. Excavation and/or Fill are not authorized in Hand Clearing zones. Placement of Erosion and Sediment Control measures in Hand Clearing zones is considered fill (temporary) and will need accounted for.



Erosion Control Plan Design in Permitted Areas

Riparian Buffer Zones – Permit needed for impacts to vegetation, any excavation or fill activities, and placement of temporary Erosion and Sediment Control devices. Permanent stabilization measures like use of Rip/Rap should also be accounted for.



Selecting the Proper Erosion and Sediment Control BMP

Perimeter BMPs

- Silt fence
  Effective for most any slope but does require drainage outlet points.
  Should be offset from toe of slope to allow for construction of fill and maintenance (check permit).
  Not effective in standing water (wetlands).

Selecting the proper Erosion and Sediment Control BMP

Perimeter BMPs

- Wattle Barrier (Coir Fiber/Excelsior)

  Effective for short slopes with limited drainage area. Doesn't require drainage outlet points.

  Should be offset from toe of slope to allow for construction of fill and maintenance (check permit).

  Not Effective in standing water (wetlands).

  Less removal effort required compared to other BMPs.

Selecting the proper Erosion and Sediment Control BMP

Perimeter BMPs

- Special Sediment Control Fence

  Effective for all slopes. Doesn't require drainage outlet points.
  Should be offset from toe of slope to allow for construction of fill and maintenance (check permit).
  Somewhat effective in standing water (wetlands).
  Stringent removal effort needed compared to other BMPs. Can be problematic in and around jurisdictional areas.

Selecting the proper Erosion and Sediment Control BMP

Perimeter BMPs

- Turbidity Curtain
  Required on most projects involving 401 permits where piles/shafts anticipated in jurisdictional water.
  Beneficial when earth disturbing activities expected on stream banks.

Selecting the proper Erosion and Sediment Control BMP

Rolled Erosion Control Products (Matting)

Recommend including a quantity on all projects.
Note on EC plans identifying slopes is adequate.
Coir Fiber Mat should be used for stream banks and flood plain.
Temporary Erosion Control Matting (Excelsior) for most slopes.
Permanent Soil Reinforcement Matting or Turf Reinforcement Matting for ditches with steep grade (4% to 5%).

Erosion and Sediment Control BMP Quantities

Wattles
- 10 foot length increments
- Recommend minimum of 50 foot (5 wattles) be included on all low impact bridge projects

Temporary Slope Drains
- Recommend a minimum quantity when earth disturbance expected on fill slopes
- Consider slope height

Special Stilling Basin
- Necessary for any project with drilled shafts
- Recommend minimum quantity of 2

Coir Fiber Mat
- Recommend minimum quantity be included on all low impact bridge projects with expected work adjacent to jurisdictional waters
- Consider area under structure
- Only type of matting recommended for stream bank stabilization

Erosion and Sediment Control Special Provisions

- Erosion and Sediment Control/Storm Water Certification (NPDES)
- Permanent Vegetation Establishment and Related Intermediate Completion Time
- Shoulder and Fill Slope Material (pH/PI)
- Shoulder and Slope Borrow

Reclamation Plans

- Environmental Evaluation
- Erosion Control Plan
- Dewatering Information

Reclamation Plans

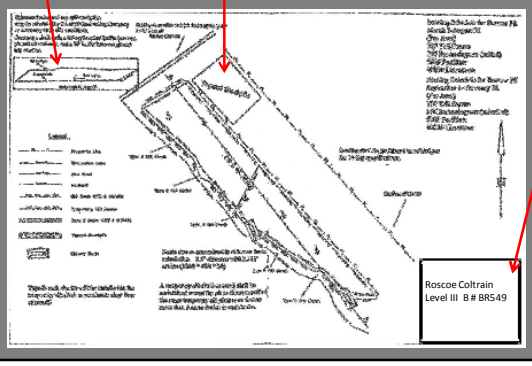
Environmental Evaluation

- Experienced Environmental Consultant
- Identify Jurisdictional Features and Protected Species
- Identify Historical Properties

Reclamation Plans

Erosion Control Plan

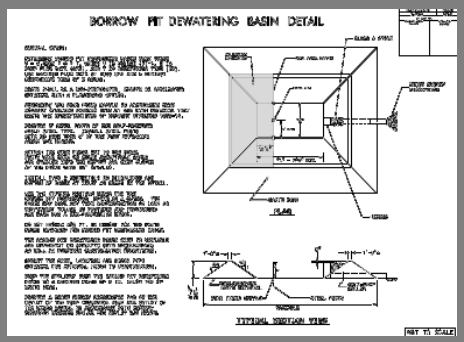
- Level III B EC/SW Certification #
- Include Calculations
- Provide Cross Section
- Locate Construction Access
- Locate Top Soil Piles



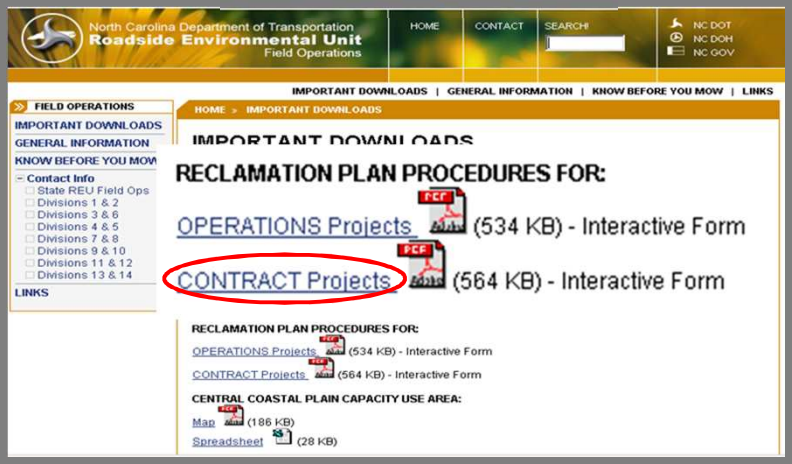
Reclamation Plans

Dewatering Information

- CCPCUA (Central Coastal Plain Capacity Use)
- Skaggs Method
- Dewatering Basin



Reclamation Plans



http://www.ncdot.gov/doh/operations/dp_chief_eng/roadside/fieldops/downloads/

Summary

- EC plan submittals for review should include all related plan sheets
- Erosion Control Plans and Permit drawings should be compared to ensure perimeter BMPs can be installed as well as permanent stabilization along jurisdictional areas
- Select the proper BMP for perimeter containment and stabilization
- Include proper Pay Items and adequate Quantities
- Include necessary Special Provisions
- Follow Reclamation Plan Guidelines related to Waste/Borrow/Staging Areas off right of way