Project Planning and Management

1. Fact-Finding
2. Initial Permitting Steps
3. Identify Goals
4. Initial Design/Cost Estimate
5. Funding/Technical Assistance
6. Final Design & Permits
7. Construction
8. Post-Construction Visits
Fact-Finding

- Culvert dimensions & condition
- Bankfull width
- Depth of fill
- Contact regional biologist about habitat values
- Subsurface conditions
- Tidal influence
Project Planning and Management

Understand regulatory requirements and contact regulators early
Project Planning and Management

Fact-Finding → Initial Permitting Steps → Identify Goals


Then Stream Smart design is appropriate
Project Planning and Management

Fact-Finding → Initial Permitting Steps → Identify Goals → Initial Design & Cost Estimate
Project Planning and Management

Initial Design & Cost Estimate

- Channel widths/depths
- Stream profile
- Geotechnical information
- Hydrologic analysis
- Tidal data
Project Planning and Management

Initial Design & Cost Estimate

A variety of options available to fit your goals and capacity

Bottomless culvert

Low-cost bridge
Funding/Technical Assistance

Opportunities for cost share and Technical Assistance are possible (see handouts)

Project Planning and Management

Fact-Finding → Initial Permitting Steps → Identify Goals → Initial Design/Cost Estimate → Funding/Technical Assistance

$ $ $ $
Project Planning and Management

Fact-Finding → Identify Goals → Initial Permitting Steps → Initial Design/Cost Estimate → Funding/Technical Assistance → Final Design & Permits
Tips for efficient permitting:

• Early start
• Pre-application discussion
• Clear and complete drawings
• Meeting or exceeding requirements
• Short work window
• Erosion Control & Dewatering Plan
Project Planning and Management

Drawings must show:

- streambed & road elevations
- culvert location & elevation
Project Planning and Management

Final Design & Permits

Drawings must show:

- crossing dimensions
- culvert elevations
- bedding size & depth
- fill depth

Install: 12" of MDOT Type "D" gravel
3" of MDOT Type "A" gravel

Restore asphalt pavement:
2" of Binder, HMA, 19.5mm
1½ of Top Course, HMA, 12.5mm

Backfill with excavated soil
Backfill in 12" lifts
Compacting each lift

Set Invert of Arch Culvert
at Elevation 3.75' to existing channel elevation

Think under each culvert with 3/4" stone
Install:
24" clay soil plug at each end of culvert,
3" for bedding
Project Planning and Management

Drawings must show:
• erosion controls
• dewatering plan
Project Planning and Management

Erosion Controls:
settling basins, side slope protection

Final Design & Permits
Project Planning and Management

Dewatering:
coffer dams, pumping equipment
Project Planning and Management

...also, plan for fish and wildlife needs *during* construction

3 of the 50,000 (*not* a typo) fish saved during dewatering here...
Project Planning and Management

- Fact-Finding
- Initial Permitting Steps
- Identify Goals
- Initial Design/Cost Estimate
- Funding/Technical Assistance
- Final Design & Permits
- Construction
Tips:

• Review plans onsite with key people BEFORE

• Materials & equipment onsite & ready

• Stick to the plan, but…

• Remain flexible

• Have fun!
Project Planning and Management

Fact-Finding → Identify Goals → Initial Permitting Steps → Initial Design & Cost Estimate → Funding/Technical Assistance

→ Final Design & Permits → Construction → Post-Construction Visits
Project Planning and Management

Post-Construction Visits

Confirm the site is stable, especially after storms
Project Planning and Management

For assistance with projects refer to:
• Technical Assistance Handout
• NRCS and USFWS Handouts