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Using Native Vegetation For Streambank Stabilization





Keys to Appropriate Utilization of Native Vegetation

- Planning & Design Considerations
- Species Selection
- Implementation/Installation
- Establishment Period



Long Term Maintenance Considerations

Planning & Design Considerations

- Is the use of native vegetation by itself for stabilization appropriate and sustainable?
- Are additional practices needed either for establishment of native vegetation or are alternative stabilization practices necessary?
- Use of the existing channel morphology and field conditions, modeling, and flow rate/design cross sections.





Planning & Design Considerations



Planning & Design Considerations

A practice that misses the overall picture of stream dynamics is destined for failure

- Bed Stabilization Vs. Bank Stabilization
- What about the riparian corridor?
- Vegetative Regimes?



What is happening to our stream and our stabilization practices?

Species Selection

Critical Factors Affecting Species Selection



Species Selection

- Critical Factors Affecting Species Selection
 - Sunlight
 - Hydrology
 - Soils



- Grading/seedbed preparation
- Temporary and permanently erosion control considerations
- Seeding and plugging
- Seasonality and timing of work



 Bank Grading/Reshaping
 Expand cross sectional area to reduce velocity





Bank Grading/Reshaping



- Considerations for Temporary, Intermediary and Permanent Erosion Controls
 - Flow rates and sheer stresses
 - Duration of functional longevity
 - Ultimate purpose of practice is to stabilize soils, seed, and plant materials

Short Term Erosion Control

Bank Stabilization with seeding and erosion blanket



6-12 Month Longevity



Short Term Erosion Control

Regrading/reshaping with erosion control blanket



Mid-term/Intermediary Erosion Control

- 100% biodegradable
- Functional longevity of 18 months to 3 years
- Provides temporary reinforcement and erosion control throughout several growing seasons
- Still dependent on vegetation as final stabilization



Mid-term/Intermediary Erosion Control

- Coir Logs can provide additional stability at toe of slope
- Anchored with Oak Posts, Stakes and twine
- Can be pre-vegetated





Mid-term/Intermediary Erosion Control

- Brush Layering/Facines
- Bound, Anchored live cuttings
- Typically Salix sp. or Cornus sp.



Permanent Reinforcement

- Vegetative Practices that require permanent root and stem reinforcement
- Urban Streams and High Velocity Channels



Permanent Reinfrocement

Vegetated Soil Lifts



Permanent Reinfrocement



Installation

Live Plugging/Sprigging



Installation

Live Plugging/Sprigging



Establishment

- Herbivory Protection
- Overseeding/
 Supplemental plugging



Establishment

Herbivory Protection



Establishment

- Invasive Species Control
 - Pulling
 - Hand Cutting
 - ► Herbicide?



Long Term Maintenance Considerations

- Invasive Species
 - Removal of overgrowth of woody invasive species
 - Allows sunlight to penetrate the canopy to promote native vegetation
 - Requires significant planting and maintenance efforts



Long Term Maintenance Considerations

Control of invasive woody species is critical



Long Term Maintenance Considerations

Control of invasive woody species is critical



Conclusions

- Take into account the longevity of the treatment options
 - If vegetation is my "final" stabilization practice, ensure that the selected plant mix suits the hydrology and sunlight regime of the project area
- Understand the project goals during design and construction
- Appropriate design, installation, establishment activities, and maintenance will ensure project success



Success!!!!



Thank you!

DENCAP INCORPORATED

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