COLORADO
Department of Transportation

Revegetation Process Changes

Myth Busters

Intent of this Guidance:

This document provides responses to some of the common concerns and misconceptions related to the recent changes to the revegetation project delivery process. The intent of this dynamic document is to provide consist best practices statewide. Consideration of each project and its unique site conditions may require the project team to discuss the best method to proceed. The revamped roadside revegetation process is new and still under evaluation, we encourage you to contact us to discuss your specific project questions. Please continue to check back for additional proposed solutions to the questions and issues that arise from the project delivery process.

DESIGN PHASE:

1. **Myth – What was the justification for the rewrite if the 207, 212 and 214 specifications?**
   Answer – In 2015, CDOT completed the Assessment of CDOT Revegetation Practices for Highway Construction Sites and the proposed changes address the findings from the research report. https://www.codot.gov/programs/research/pdfs/2015-research-reports/assessment-of-cdot-revegetation-practices-for-highway-construction-sites

   In 2019, the CDOT Landscape Warranty Task force collaborated on the two main goals of closing projects sooner and reducing costly vegetation re-work. The goal is to close projects within 12 months of project partial acceptance and create an alternative to landscape warranty milestones on low and medium risk projects.

2. **Myth - Topsoil testing is required on all CDOT projects and is a requirement of the CDPHE Stormwater Permit.**
   Answer – The topsoil testing process is a tool to help inform SWMP designers. The topsoil depth survey and lab results will improve the success of revegetation and should be used in the following design phase decisions:
   - Determine the locations of the site where existing topsoil is available and the average depth that can be salvaged.
   - Determine if existing topsoil should be salvaged and stockpiled or if other topsoil management strategies should be used on the project.
   - Identify chemical or physical limiting factors to native plant establishment.
   - Provide data to correctly specify the 212 topsoil amendments.
   - Determine seed mix composition based on pH and salinity lab results.

   Topsoil testing should only be conducted when the project plan to reuse on-site topsoil (use pay item 207-00700).

3. **Myth – There is no guidance for SWMP Designers to consider when suggesting that a project should salvage and stockpile the existing topsoil.**
   Answer – Conduct topsoil testing only if the existing site conditions meet the following criteria:

   - If existing site vegetation consists of desirable plant species and overall has a low percentage of noxious weeds and annual grasses. A good rule of thumb to determine whether to salvage topsoil is noxious weeds and annual grasses should be less than 10% of the existing vegetative cover.
   - If a large amount of rocks greater than 6" in diameter are visible on the surface. Surface coverage greater than +/-20% of large rocks make salvaging topsoil cost prohibited and the project will require a 207 project special provision based on the CDOT Maintenance requirements in the standard.
   - If space is available to accommodate topsoil stockpiles and stockpile management. Management of topsoil and the stockpiles preserves properties to support revegetation.
   - If conditions allow all topsoil stockpiles to be placed at a minimum 50 feet away from Waters of the US.

4. **Myth – What is the statewide process for in-house designed SWMPs to charge the lab cost for topsoil testing to projects?**
   Answer - Topsoil testing is charged to the project. The laboratory analysis cost is approximately $60 for each sample submitted. The most efficient payment method is for the Region PCard holder to complete payment once the invoice has been received. Until the GSOW is updated in early 2022, topsoil testing will need to be added to the GSOW.

5. **Myth – What is the process for making topsoil amendment recommendations once receive laboratory analysis?**
   Answer - CDOT has developed a Topsoil Amendment Calculator that allow SWMP Designers to enter the lab results data and the area of each seeding method. The calculator will provide all the required pay items and quantities that are required on the SWMP.

6. **Myth – No project used the revised 207 and 212 specifications prior to making them standard special provisions. In addition, there is no cost data available for construction budgeting.**
   Answer - Below is a list of projects that used the specifications and pay items and provide some competitive cost data for construction estimating.
   - 22320 SH69 Structure Replacement (M-13-P) – Pilot Project
   - 21011 SH96 Structure Replacement (K-17-F) – Pilot Project
   - 21088/21089 SH7 Estes Park to SH72 – Pilot Project
   - 22962 - US34 Structure D-27-G Replacement
   - 23254 - US36 Emergency Rebuild

7. **Myth - Is training available for SWMP Designer to implement the changes?**
   Answer - CDOT is requiring a recertification class for all SWMP Designers that will focus on using the new 207 and 212 project delivery tools. The recertification class is anticipated to be released in the 4th quarter of 2021.

8. **Myth – The consulting design teams do not know about the topsoil sampling requirement when they are developing design proposals.**
   Answer – The Landscape Architecture Section has requested that topsoil surveys and lab testing be added to CDOT's Generic Scope Of Work (GSOW) for consultant design services. The requirement will be similar to the vegetation and noxious weed survey and CDOT's PM can indicate if they want the consultant to perform the work or if the topsoil lab results will be provided by CDOT. For projects that did not use the new GSOW, the consultant should ask CDOT if the specific project site topsoil was sampled, CDOT can perform the topsoil sampling or for the time being, utilize the previous soil amendment protocol used on CDOT projects.

9. **Myth – There is no guidance for SWMP Designers for when to use the 207-00704 Subgrade Soil Preparation pay item based on project and site specific conditions.**
   Answer – The recertification class for all SWMP Designers provides the following guidance: Together with the design team, the SWMP preparer will determine the feasibility of subgrade soil preparation for the project, and how much of the project area will require the de-compaction treatment. This mechanical process of shattering compacted subsoils is referred to as "subsoiling" or "ripping." When calculating the anticipated area of subgrade soil preparation, include only the areas that will receive seeding as a permanent stabilization method. The SWMP designer must consider project-specific site conditions when determining the feasibility of successfully implementing subgrade soil preparation.

   Sites conditions that would benefit from using the subgrade soil preparation pay item:
   - Abandoned roads, haul roads, batch plants and on-site staging areas
   - Bioretention areas
   - Fill slopes that conform to the standard 203.03 material requirements for soil and rock embankment material with particles sizes less than 6 inches.

   Site conditions that might not be appropriate to use the subgrade soil preparation pay item:
   - Mass grading operations are not required for the project (no dozers or graders mobilized)
   - Most disturbed areas are less than 5 feet wide
   - Subsoil contains a significant quantity of large rocks
   - Subgrade utilities prohibit ripping operations
   - Cut slope embankments stepper than 2.5:1
   - Subsoils with high moisture content such as wetland and riparian areas

   Project shoulders receiving an aggregate base course or recycled asphalt do not require fracturing of compacted subsoils.

10. **Myth – Post Construction Establishment Phase (PCEP) can be used for topsoil sampling and vegetative transects**
    Answer –The intent of Post Construction Establishment Phase is for maintenance after construction. The funds are not for pre-construction phase.

11. **Myth –Increasing the seeding rate will increase the chances of establishing native plant communities after a disturbance.**
    Answer – Increasing the seeding rate provides an initial growth, but the plants must complete for water, light, and nutrients. Increasing the seed rate will create additional competition in the root zone, causing stress and disease. In the end, this is not a solution for successful long-term revegetation.

CONSTRUCTION PHASE:

1. **Myth - Region Environmental Staff does not have access to penetrometers if construction project Engineers need assistance with testing the subgrade soil preparation.**
   Answer - CDOT has purchased penetrometers for each region. Below is a list of revegetation subject matter experts in the regions that would have access to the penetrometers.
   - Region 1- Susie Hagie (Susie.Hagie@state.co.us) 303-757-9932
   - Region 2- Troy Rice (troy.rice@state.co.us) 719-648-3462
   - Region 3 – Jen Klaetsch (jennifer.klaetsch@state.co.us) 970-683-6223
   - Region 4- Nick Schipanski (nicholaus.schipanski@state.co.us) 970-350-2127
   - Region 5- Danielle Wilkinson (danielle.wilkinson@state.co.us) 970-382-1425

2. **Myth – Is there training available for the Contractor and CDOT Project Engineers during construction to implement the changes?**
   Answer - CDOT is in the process of developing a series of short videos for Engineers/Inspectors that details the verification and testing requirements of the new specifications.

3. **Myth – The requirements from 207, 212, and 214 have added two additional meetings besides the Environmental Preconstruction Conference.**
   Answer -The 207, 212, and 214 project special provisions only add one additional meeting during construction. The requirements of the Site Pre-vegetation Conference are covered in 207.03 and the proposed agenda items can be found on the Landscape Architecture website.
   https://www.codot.gov/programs/environmental/landscape-architecture/construction-specifications-details-tools-1/207-and-212-psp-construction-phase-tools

4. **Myth –Because topsoil can no longer be compacted in windrows at the edge of disturbance, it cannot be used as a control measure.**
   Answer – The Landscape Architecture Section has developed a project special detail that provides the compacted temporary berm required for an effective control measure along with the best practices to protect salvaged windrowed topsoil at the edge of the construction disturbance.
   Project Special Detail - Topsoil, Stockpile, Windrow, and Temporary Berm (PDF)
   Project Special Detail - Topsoil, Stockpile, Windrow, and Temporary Berm (MicroStation file)

POST CONSTRUCTION PHASE:

1. **Myth – There is no process in place to assess whether or not the process changes are improving long-term roadside revegetation sustainable conditions after project completion.**
   Answer - CDOT is developing a post construction upland revegetation monitoring plan for projects statewide to collect data on the following performance standards.
   - Native species cover and diversity
   - Successional stages for desirable specified species
   - Rooting depth and topsoil structure
   - Nutrient cycling
   - Organic matter composition and litter/duff production
   - Diversity of soil biota
   - Infiltration rates and soil aggregation rating
   - Identify noxious weeds and percent coverage
   - Pollinator habitat assessment rating