



Appendix D-5

Innovative Revegetation Study Task 4 Field Visit Observations

Date of Field Visit: 9/17/14

Location: Urban Corridor Project

TerraLogic Team Attendees: Art Hirsch

TerraLogic's Art Hirsch conducted a Construction Revegetation QC Inspection for Urban Corridor Project revegetation operations on September 17, 2014. TerraLogic along with CDOT representative Greg Fischer, discussed the erosion control and revegetation progress of the project with the CDOT Environmental Coordinator, the Landscape Contractor and Erosion Control Supervisor (ECS) and a QA/QC Construction Engineer representative. This visit was an abbreviated revegetation site evaluation due to limited contractor availability and time. In addition, a brief field visit was conducted to obtain soil samples from the project topsoil. During the site visit, soil samples were obtained from the salvaged top soil pile, a background soil sample and a NRCS soil sample.

The Urban Corridor Project is a design build project and the Construction Stormwater Permit is held by the Granite-Ames Team and not CDOT. The project is from Federal Boulevard in Denver to 88th Street in Louisville. It was estimated that the total area of disturbance is 415 acres with 300 acres requiring seeding.

The Construction Revegetation QC checklist was completed during the visit. The following are the QC observations and recommendations:

Basic Findings 9/17/2014:

- 1) CDOT Specifications Section 214.04, first paragraph mentions: " throughout the Landscape Establishment Period, the Contractor shall maintain all plant material and *seeded areas* in a healthy and vigorous growing condition and ensure the successful establishment of vegetation. This includes performing establishment, replacement work and landscape maintenance. The Landscape Establishment period depends upon receipt of the written Notice of Substantial Landscape Completion form the Engineer. Substantial Landscape Completion occurs when all plant material in the Contact has been planted (under Section 212,213, 214, and 623); except for Section 214 pay item Landscape Maintenance. If the Notice of Landscape Completion is issued during the spring planting season, the Landscape establishment period begins immediate and last for a period of 12 months. If the Notice of Landscape Completion is issued any other time, the Landscape Establishment period begins at the start of the next spring planting season and lasts for a period of 12 months".

Furthermore, "After all planting on the project is complete, a plan inspection shall be held including the Contractor, Engineer and CDOT Landscape Architect to determine acceptability of plant material".

This specification lacks specific detail in regards to landscaping and seeding establishment. It is assumed that this specification relates to non irrigated vegetation development (ie revegetation). The terminology of “healthy and vigorous growing condition and ensure the successful establishment of vegetation” is not well defined. If it assumes that non irrigated vegetation falls in to this specification is possible that the Contactor assumes successful establishment of vegetation may be establishing 70 percent vegetation relative to pre-construction conditions. This seems to be the pre-determined and assumed endpoint for many construction projects.

The Notice of Landscape Completion documentation has not been observed during any Construction Revegetation QC site visits. It is not clear if this activity is actually performed. In addition, there was no mention or documentation reviewed that indicates that the Contractor, Engineer and CDOT Landscape Architect determine acceptability of plant material, which may include plant seeding. The insertion of “seeded areas” into the specification makes the requirements for un-irrigated areas unclear.

- 2) There was a lot of confusion about the proper seed mix for the project. Five different seed mixes were proposed by a landscaping consulting firm. Apparently the proper seed mix was not detailed by CDOT in the RFP and there was no CDOT regional support on this issue. Apparently the Urban Corridor Project Consultant made the determination for the final seed mix without CDOT concurrence. There is discontinuity between the seed tag and the Seeding Plan seed mix and it is not exactly clear what was actually planted.
- 3) Compost and other soil amendments were not added to existing topsoil used for revegetation. This decision was not based upon previous soil chemical data but apparently by a non-CDOT management decision to ignore amendment requirements established and/or approved by CDOT for the project. According to the SWMP soil conditioner was a pay item and required 600 pounds per acre of biological nutrient organic based fertilizer, 200 hours pounds per acre of humate and 65 cys/acre.
- 4) There is a disconnected between the seed mix identified in the SWMP and on the Landscape Plans Schedule and Seed Mix Table Sheet.
- 5) There was a sense of non-cooperation and animosity between the Regional CDOT Landscaping representative and the Urban Corridor Project Landscape Contractor. Better Regional CDOT communication for improvement was expressed by the Landscape Contractor
- 6) There was 122 transects used to determine the pre-construction vegetative cover by the Landscape Contractor. Documentation was not reviewed.
- 7) The top 6 inches of top soil was collected and stockpiled within piles or berms at various locations along the project area. No erosion control BMPs were used at the stockpile location sampled for this visit.
- 8) Herbicide on topsoil was not used but it was in the Urban Corridor Project RFP. A potential disconnect between the CDOT Specifications and RFP.
- 9) Seeding was performed outside the seeding window as required by CDOT Specification 212.03. Seeding occurred into late June, 2014 time period (after the June 1 period) and started the first week of August 2014 (before the September 15 period).
- 10) It was not clear who was the ECS; either the Dirt Engineer, the Landscape Contractor or the CDOT representative Tim Buntrock. For the purposes of this report summary the Landscape Contractor was the ECS.

- 11) It was mentioned that revegetation areas are monitored after seeding; however, the action is not documented and is not performed on a routine schedule.
- 12) Not all rocks are removed before seeding as per CDOT Specification 207.02
- 13) If there is a revegetation problem identified by the Landscape Contractor, it is not clear if this is identified as a formal corrective action requiring attention.
- 14) Apparently a formalized revegetation plan is required in the RFP; no formalized plan was reviewed or presented at the meeting other than the SWMP.
- 15) No seed mix was collected for seed viability testing; no seed viability testing was performed by the Landscape Contractor before seeding by the project. The contractor had total faith in the seed vendor.