

# Vegetative Survey Transect Procedure

## Background

A vegetative survey transect measures existing vegetation cover in a portion (cross section) of a study area to extrapolate percent cover in the entire study area. Transects are conducted before and after construction to document that the permanent stabilization requirements outlined in the Stormwater Construction Permit (SCP) are met. The line transect method is less prone to variability than visual estimates.

Transects documenting existing vegetation conditions are conducted either

1. prior to construction activities, ideally in the Pre-construction (or Design) Phase of project development (before AD); or
2. during the Construction Phase (after Award), in the pre-environmental meeting. The Stormwater Management Plan (SWMP) Administrator for Construction or the CDOT Contractor may perform the transect(s).

A second vegetative survey or transect is performed after construction, as documentation to close out the SCP. This supporting evidence demonstrates that the project site has been adequately stabilized to 70 percent of pre-disturbance vegetative cover and does not show signs of accelerated erosion. This documentation will be submitted to CDOT to close the SCP.

A vegetative transect form is located on the CDOT Landscape Architecture website.

## Tools

- 50' measuring tape
- Dowel, rod, tent stake or other straight implement
- Site maps
- GPS, if available
- Notebook and pen

## Procedure

Pre-construction vegetative transects are to be completed by a CDOT representative (either by the SWMP Administrator for Design if completed during Pre-Construction Phase or SWMP Administrator for Construction if during Construction Phase).

Follow CDOT's safety protocol while conducting transect surveys.

The existing Pre-Construction Vegetation documentation and Post-Construction Vegetation establishment include the following:

1. At a minimum, one Pre-construction transect of existing vegetation is conducted for projects five acres or less of disturbance. For projects of five to 20 acres, it is recommended a minimum of two transects are conducted. The Environmental Specialist determines the number of transects required for large construction projects (greater than 20 acres).
2. Locate transects in area(s) representative of the vegetation for the whole construction project. If the vegetation differs within the project area, take one transect to represent each area. Assign each transect a unique number identifying its location.

Note: If the site has been previously disturbed, use an adequate reference site to take the vegetative transect either within or near the project area but within the CDOT ROW. Contact a CDOT Landscape Architect for additional guidance.

3. Choosing a landmark such as a mile marker, sign, structure, or landscape element can help the Post-construction vegetative transect be easily replicated in the vicinity. Alternatively, provide GPS coordinates.
4. **ROW Disturbances:** Conduct transect(s) by laying out a 50-foot measuring tape perpendicular to the road beginning at the road pavement. *OR*

**Utility Projects:** Conduct transect(s) by laying out a 50-foot measuring tape parallel to the disturbance.

5. Start at the one-foot mark. Using a dowel, ruler, or other straight tool, note whether basal vegetation (the base of the plant) is encountered at each footmark. Vegetation may consist of grasses, shrubs, trees, or forbs. If the ROW or area of disturbance is less than 50 feet, adjust the distance in the calculation, referring to the example in #7 below. Do not measure vegetation outside the limits of disturbance, unless transect is conducted at an adequate revegetation site.

Note: Weeds may be counted in Pre-construction, but are not counted in Post-construction vegetative percent cover calculations.

6. Document transect locations, transect number, and Pre-construction vegetation percent cover for each transect on the either the SWMP Site Maps or onto an aerial map documented in Tab 17. This information will be used after landscape stabilization activities have occurred, seeds have germinated and vegetation has begun to grow for determining the 70% Post-construction vegetative cover as required to close out the Construction Stormwater Permit.
7. Pre-construction vegetative cover is documented on the transect forms and photo documentation is required as backing evidence. Document the vegetation by taking photographs prior to construction disturbance. Caption each photograph with a transect number, direction, and description. At minimum, the following photographic documentation is required for each transect both prior to construction and Post-construction to determine if final stabilization has been achieved:
  - a) Photographs at the beginning and end of each transect looking down the length of the transect (at approximately 90 degrees)
  - b) A representative landscape view of the surrounding area
  - c) Photographs of the measuring tape laying on the ground and surrounding vegetation at the beginning, middle and end of each transect
  - d) Transect photographs and data sheets are stored with the SWMP
8. Calculating percent cover. Transect results are expressed as a vegetative percent cover rounded to the nearest percentage point.

*Example 1:* One transect contains 50 points in which 28 points exhibit cover is  $(28/50) = 0.56 = 56\%$  cover.

*Example 2:* Combining two transects of 50 points each in which 28 points exhibit cover in one transect and 41 points exhibit cover in the other transect is  $(28+41)/(50*2) = 69/100 = 0.69 = 69\%$  cover.

*Example 3:* One transect contains 35 points (because the ROW is 35' wide) in which 5 points exhibit cover  $(5/35) = 0.14 = 14\%$  cover.
9. A corresponding Post-construction vegetative transect shall be performed by the Contractor's SWMP Administrator, CDOT environmental specialist, or biologist to determine post-construction percent revegetation establishment. Conduct Post-construction vegetative transects in disturbed areas as close to the original transect as possible. Document the vegetative cover by taking photographs as outlined in #6 and calculating percent cover as outlined in #7.

## CDOT Vegetation Transect Form

Project Name	Date	Transect Location
--------------	------	-------------------

Point	Transect Number					Comments - Vegetation Type - grasses, shrubs, trees, forb, native, weeds
	1	2	3	4	5	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						

<p><b>% Pre-Construction Cover</b> _____</p> <p><b>70% of Pre-Construction Cover</b> _____</p>	<p><b>% Cover Calculation for Transect</b>              (# of yes points/50)100</p> <p><b>% Cover Calculation for Multiple Transects</b>              (# of yes points Transect 1 + # of yes points Transect 2)/100</p>
--	---