



PROPOSAL FOR ECO-TERR DISTRIBUTING, INC.

Project Title:

Proposal to Design and Implement a Plan to Assess the Performance of StabiliGrid in Horizon Village, Grants Pass, OR

This Proposal/Work Authorization is intended to establish responsible parties, ensure communication between Cascade Earth Sciences (CES) and Eco-Terr Distributing, Inc. (Client), and outline the terms and conditions under which both parties will operate. The proposal defines the approach, scope of work, and estimated costs for services provided.



Partial installation of StabiliGrid in Horizon Village. 8-24-06.

StabiliGrid is a product used to provide structure and stability to a ground surface, while allowing natural drainage through pervious material. One use of this product is to provide permeable parking and driveway space. The product is widely used in Europe. The Client sells the product in the USA, and wishes to learn more about the performance of the product under use and climate conditions in Oregon.

Horizon Village is a unique retirement village development located in southern Oregon in Grants Pass. The owner and manager of Horizon Village believe in developing a sustainable community for the long term, and have been proactive in implementing various best management practices (BMPs) suitable to their community. Horizon Village is currently installing StabiliGrid in a 20 feet x 110 feet driveway area that will serve two homes. Both the Client and Horizon Village would like to investigate how well the product performs in this application.

CES is a leader in designing and implementing natural methods to treat and route stormwater runoff from communities before it flows into our streams, lakes, and rivers. The client contacted the CES Medford Office and requested assistance in designing a program to monitor the performance of the product being installed in Horizon Village.

Background



CES Senior Hydrologist, Robert Coffan, visited the Site on September 24, 2006, and met with the property owner, the property manager, the general contractor, and the product distributor to gather information and listen to their ideas and concerns. Based on the initial Site visit and telephone discussions with the Client, CES identified the following questions:

- How will the product hold up (wear and tear)?
- How will it perform during high-flow storm events?
- Will infiltration rates and soil compaction change over time?
- Will the driveway look nice (Changes in aesthetics)?
- What maintenance issues will there be?
- Which grass mix is better in the long term?

Objective: Our objective is to design a year-long monitoring/assessment plan, implement the plan in 2006-2007, and provide a report of results to answer the questions listed above.

This proposal provides a scope of work, including estimated costs and schedule to design and implement a year-long plan to assess the performance of the StabiliGrid product currently being installed at the Site. The scope of this proposal is broken into three tasks below: Plan Design, Monitoring for One Year, and Reporting the Results.

Task 1: Performance Plan Design

CES will develop a monitoring plan to assess performance of the product at the Site. The owners of Horizon Village have requested some assistance in selecting the appropriate soil medium and turf grass mixture to use. They are also interested in testing several mixtures to assess performance and aesthetics during the changing seasons. CES will develop a planting plan for the Site. This will include and investigation of grass and/or moss mixes. The site will be used to assess the overall performance of two or three mixes. Since the driveway is already partially installed, CES will make this a high priority and provide recommendations to Horizon Village within a week of authorization.

One important aspect of the application will be it's ability to receive rainfall, allowing it to infiltrate into the ground rather than generating run-off at the Site that flows into nearby streams. Therefore, CES will perform two sets of infiltration tests at the Site. Three stations will be identified: one back

Objective

Scope of Work



CES will perform infiltration tests at the Site

ground station in the vacant field immediately south of the driveway, one directly in the driveway, and one in an area that will be subjected to similar traffic without the StabiliGrid. A densiometer may also be used to assess compaction. The first set of infiltration tests will be performed during initial implementation. CES will also review existing soils maps to compare published data to *in situ* results. The second set will be performed during the final Site visit in the summer of 2007 to assess changes in infiltration rates over time.

CES will identify an area(s) to monitor stormwater that may potentially runoff the site beneath the gravel base layer onto the adjacent downgradient property. These areas will likely consist of installation of 6-inch diameter PVC pipe with a viewing cap. Photo-documentation points will also be established.

CES will work directly with the general contractor, Steve Janes, to understand how the product was installed, and set up monitoring stations at the Site.

Task 2: *Year-Long Monitoring*

Following the initial implementation of the monitoring plan, CES staff will make two scheduled visits, and one 'on-call' visit to the Site to collect field data. CES will also meet with the general contractor, and Horizon Village staff to receive an update of observations and concerns since the last visit. The first visit will be performed during the winter in January 2007. The second visit will be performed in July 2007. CES will perform a second and final round of infiltration testing to assess changes in infiltration rates and soil compaction at the monitoring sites.

CES staff will also perform an 'on-call' visit to the Site during a high-flow storm event of significant intensity to assess the ability of the installed product to accept runoff. Horizon Village will designate someone to contact CES to perform the Site visit.

Task 3: *Report Results*

The information collected in Tasks 1 and 2 will be used to provide the Client with a summary of results. The summary will consist of a brief (2-3-page) technical memo, a figure showing relevant monitoring features, progress photographs, and supporting tables and/or graphs, as appropriate.

Monitoring



How will the product hold up?

Report Results

CES proposes the following schedule:

One day after authorization: *Begin working with general contractor to factor monitoring plan into current construction.*

September 7, 2006: *Provide Planting Plan*

September 15, 2006: *Complete Monitoring Plan Design.*

September 20, 2006: *Implement Plan and Collect Initial Field Data .*

January 2007: *Perform second Site visit and collect field data.*

On Call?: *Perform on-call Site visit during high flow event.*

July 2007: *Perform final Site visit and collect field data.*

August 2007: *Present Results*

The findings and conclusions made by CES during the monitoring assessment will not be scientific certainties, but rather an opinion based on professional judgment concerning the significance of the data gathered during the course of the assessment. In calculating our cost estimate, the following additional assumptions have been made.

- CES has permission to access the property to perform the proposed aspects of the assessment.
- CES will maintain direct and open communications with the Client and Horizon Village through all aspects of the project.
- Some alteration of the driveway area may be required in order to collect field data. CES expects this to be minimal.
- CES is performing a third-party performance review. CES is not responsible for actual performance.
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Schedule

Assumptions and Limitations

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