



ITEMIZED SCOPE OF WORK

Task 1 – Project Management:

This task will be ongoing throughout the entirety of the project and its other phases. All project design related tasks will be directed through the project manager, Jeff Naess, with Bowman and Williams and disseminated to the relevant parties. Bowman & Williams will provide the County with monthly progress reports and monthly progress invoices.

Task 2 and 3 – Site Analysis Phase:

Geotechnical Services:

- a. Site reconnaissance and review of available data in our files regarding the site and region.
- b. Coordinate with other consultants as needed to maintain timeliness of work and synchronization between the soils investigation and the topographic survey.
- c. Exploration of subsurface conditions with two (2) exploratory borings drilled up to 30 feet deep or practical refusal. Borings will be drilled with 4 to 6 inch diameter continuous flight auger equipment advanced with tractor mounted drilling equipment.
- d. Laboratory testing of select samples obtained to evaluate the engineering properties of the subsoils.
- e. Engineering analysis and evaluation of the resulting data. Develop geotechnical recommendations based on the findings and present design criteria for general site grading, retaining walls and general site drainage.
- f. Submittal of a report presenting the results of the soil investigation.

Topo and Boundary Survey Services:

- g. Attend meetings and communicate with the project stakeholders to develop a preliminary area of interest prior to conducting a field survey.
- h. Coordinate with the utility marking services to have the utilities marked prior to the field survey.
- i. Transfer a Published Elevation Benchmark to the Site, or use NGS-OPUS to determine the project benchmark elevation (Elevations will be based on the NAVD88 Datum).
- j. Perform a field survey to locate sufficient boundary to determine the road right of way sidelines, and also to set center of right of way points at the site at angle points. This will include right of way determination and monumentation at the slip out site and approximately 100 feet on each side of the slip out.
- k. Perform a Topographic field survey of the site based on the site meeting.
- l. Prepare a topographic map outlining the road damage and the extents of the slip out.
- m. Prepare a Record of Survey as required when setting permanent monuments.
- n. It is understood that a Record of Survey and property easements might be needed over the course of the project. Documentation will be well maintained in order to easily facilitate the preparation of these easement legal descriptions and plats if needed after the civil repair design is complete.

Task 4 and 5 - 65% and 95% Structural and Civil Design Phase:

- a. Attend meetings and communicate with the project stakeholders to develop a preliminary structural and civil design.
- b. Review information provided by the surveying crew, geotechnical engineer, and FEMA documents, as well as any other information made available to us by other project members.
- c. Structural Design:
 - i. Prepare analytical models and preliminary calculations for a proposed retaining wall to identify any areas that might require further information or coordination.



- ii. Prepare preliminary drawings showing a retaining wall plan, basic wall sections, typical details, and Section 10 technical specifications. These drawings will be completed to 65% and then submitted to the County and the project team members for review and coordination.
- d. Civil Design:
 - i. Conduct an analysis to understand the watershed and storm water demands at the site.
 - ii. Develop recommendations for culvert and/or utility pipe sizes as needed on the site. We will analyze the need for any cut off curbs or french drains to manage the flow of storm water.
 - iii. Prepare civil drawings as required to mitigate drainage issues at the site, and provide Section 10 technical specifications to address all civil items. These will include a civil grading and drainage plan, civil details, an erosion control plan, and details as necessary.

Task 6 - 100% Construction Document Phase:

- a. Attend meetings and communicate with the project stakeholders to communicate and resolve any changes to the preliminary structural and civil design, after the County review period.
- b. Incorporate review comments from the project geotechnical engineer as needed to meet the intent of the soil design criteria.
- c. Prepare and deliver final drawings, both civil and structural, sufficiently detailed for use with the County's competitive bid process.
- d. Assist in obtaining approval from the regulatory agencies involved, by responding to plan check comments regarding the structural and civil design of the retaining wall and any civil site work.
- e. Provide the administrative and drafting support necessary to complete the tasks above.
- f. Prepare legal descriptions and plats as needed for construction easements and permanent easement and parcel acquisition.

Task 7 and 8 - Construction Bidding and Administration Phase:

- a. Respond to request for information, prepare addendums, and other requests from the contractor during the bidding and construction phases. Attend pre-bid meeting.
- b. Consult with the County on code requirements, design intent, or changes to the construction documents.
- c. Provide technical assistance to the County, review contractor submittals.

If additional scope of services is required, we will provide an additional estimate for your approval prior to proceeding. Should unforeseen circumstances be encountered which add to our services, we will notify you of this as well. Should the scope of work be less than anticipated, we will only bill you for the time spent by our personnel on the project. We have included our current hourly charge rates for your records.