NOTICE TO PROCEED

TO: Alliance Consulting Engineers, Inc.

RE: NOTICE TO PROCEED

Task Order 22-25-005 – Westwood Heights Subdivision Drainage Improvements

Please consider this your NOTICE TO PROCEED on the above referenced project. In accordance with the terms of the contract, work is to commence within 24 hours receipt of the Notice to Proceed unless otherwise agreed and to be completed within ____ calendar days from that time. Any additional expenses will need to be approved by the Effingham County Board of Commissioners in the form of a change order.

Dated this _____day of __________, 2022

Effingham County Board of Commissioners

____
Wesley Corbitt, Chairman

ACCEPTANCE OF NOTICE:

Receipt of the above Notice to Proceed is acknowledged.

Contractor:____

By: ____

Title: ____

Date of Acceptance: ______________________________

ALLIANCE CONSULTING ENGINEERS

January 26, 2022

Ms. Alison Bruton, Purchasing Agent
Effingham County Board of Commissioners
804 South Laurel Street
Springfield, Georgia 31329

RE: Engineering Services for the Proposed Westwood Heights Subdivision Drainage Improvements in Effingham County, Georgia
RFP No. 22-25-005
Proposal No.: P22003 – G, H

Dear Ms. Bruton,

Thank you for giving Alliance Consulting Engineers, Inc. the opportunity to provide this proposal for Professional Engineering Services for Design and Construction Services for Proposed Drainage Improvements in Westwood Heights Subdivision in Effingham County.

Alliance Consulting Engineers, Inc. has completed over 1,950 projects during 18+ years in business, including several hundred Stormwater Design and Drainage Improvement projects. Similar Stormwater projects include Pine Arbor Subdivision in the City of Hardeeville, Brighton Hill Subdivision in the Town of Lexington, Old Carolina Planned Unit Development and Buckwalter Place in the City of Bluffton, Harlem/Blue Pond in the Town of Bishopville, and the National Care Community in the City of Charleston, South Carolina.

Alliance Consulting Engineers, Inc. appreciates the opportunity to submit this Proposal for Professional Engineering Services for the Westwood Heights Subdivision Drainage Improvement Project for Effingham County. Should you have any questions or comments, please do not hesitate to contact us at (843) 757-5959.

Very truly yours,
ALLIANCE CONSULTING ENGINEERS, INC.

Thomas M. Kennedy
Regional Manager

cc: Mr. Deepal S. Eliatamby, PE, Alliance Consulting Engineers, Inc.
Mr. Adam Hogan, PE, LEED Green Associate, Alliance Consulting Engineers, Inc.

Alliance Consulting Engineers, Inc.
23 Plantation Park Drive, Suite 204 Bluffton, SC 29910-6072 Phone 843 757-5959 Fax 843 757-6659 www.allianceCE.com

Bluffton, SC | Charleston, SC | Charlotte, NC | Columbia, SC | Greenville, SC

I. WORK PLAN

Based on the Effingham County Board of Commissioners Request for Proposal No. 22-25-005 and Alliance Consulting Engineers Inc.'s understanding of the Project, Alliance Consulting Engineers, Inc. will provide Consulting Services to correct recurring drainage problems across the entire Westwood Heights Subdivision which encompasses a total area of +/- 220 Acres as follows:

1. Drainage Study and Cost Opinion

A Drainage Study will be performed of the +/- 220 Acre basin to identify areas in the Subdivision that flood and develop alternatives to address flooding. The Drainage Study will include:

- Topographic Survey of the existing drainage network
- Delineation of drainage basins
- Calculation of curve numbers and times of concentration
- Model preparation of existing drainage system using XP-SWMM software
- Run model to determine the area in Subdivision that flood
- Run model to develop up to Three (3) Alternatives to address the flooding
- Prepare a Drainage Report that outlines the basin characteristics, areas that flood, modeling methodology, and proposed improvements. The Drainage Report will present Smart Growth Best Practices and Innovative Solutions and include Cost Opinion and other supporting documentation (Exhibits, Tables)
- Submit Drainage Report for review and address up to two (2) sets of comments
- Attend up to two (2) meetings with Effingham County Staff
- Attend one (1) Effingham County Board of Commissioners meeting

2. Engineering Design and Permitting Services

For selected Alternative, Alliance Consulting Engineers, Inc. will prepare Design and Construction Plans for submittal to Effingham County Board of Commissioners and for Agency Review (Georgia Soil and Water Conservation Commission, etc.) which will include:

- General Sheets (Cover, Notes)
- Plan and Profiles, Cross Sections
- Erosion and Sedimentation Control
- Construction Details and Drawings
- Technical Specifications and Bid Form
- Geotechnical Subsurface Exploration (Up to 15 Hand Auger Borings)
- Permitting Services

3. **Bidding and Award Services**

Assistance will be provided for Bidding and Award Services to determine Construction Costs for the Selected Alternative to include:

- Attend Pre-Bid Meeting
- Address Bidder questions
- Evaluate Bids, Prepare Letter of Recommendation, Prepare Certified Bid Tabulation and Bid Comparison Sheet.

4. **Construction Administration**

A twelve (12) month period of construction has been factored to include:

- Attending Pre-Construction Conference
- Review of Shop Drawings
- Review of Requests for Information and Monthly Pay Requests
- Attend Monthly Project Meetings
- Perform one (1) Site Visit per week
- Prepare Closeout Documentation to include As-Built Survey with Record Drawings with GPS Coordinates in Hard Copy and Electronic Format

II. SCHEDULE

Alliance Consulting Engineers, Inc. will begin the Professional Engineering Services within three (3) weeks of receipt of a signed Notice to Proceed and coordinate with Effingham County an agreed upon schedule for the Project Scope based on timing needs estimated as follows:

- Notice to Proceed — 2 to 4 Weeks
- Kickoff Meeting — 2 to 4 Weeks
- Drainage Study and Cost Opinions — 8 to 12 Weeks
  - Topographic Survey
  - Modeling
- Engineering Design and Construction Plans — 8 to 12 Weeks
  - Geotechnical Subsurface Exploration
  - Environmental Science
  - Permitting
- Construction Administration — 8 to 10 Months
  - Bidding and Award
  - Meetings, Site Visits

III. NOT TO EXCEED FEES

The Fees presented below have been prepared from the man-hour rates agreed upon in Indefinite Delivery Contract dated April 23, 2021 between Effingham County Board of Commissioners and Alliance Consulting Engineers, Inc. and based upon Alternate 1 being the most complex and expensive design solution determined by Drainage Study.

Scope of Services	Fee	Man-hour Estimates
1. Drainage Study and Modeling		450
○ Base Model: Stormwater Best Practices	$ 51,000	
○ Alt. 1: Vary Periods (Min. 25 year) + $10,000	Add	
○ Alt. 2: Vary Retention/Conveyance + $10,000	Add	
2. Engineering and Permitting Services		
○ Assume Most Complicated Design/Scope	$114,000	725
○ Value Engineered Surface Solution - TBD	Deduct	
○ Value Engineered Subsurface Solution - TBD	Deduct	
3. Bidding and Award Services	$ 11,000	60
4. Construction Administration -	$ 78,500	480
Reimbursable Expenses	Cost plus 15%	

- Application Fees
- Drawing and Report Reproduction Costs
- Regulatory Fees

There are many approaches to improving Stormwater Drainage, and Alliance Consulting Engineers Inc. believes the best, most cost-effective solutions start with Modeling to thoroughly understand Site Conditions, Variables, and Expectations. The Model can then be used to locate and quantify flood-prone areas where information such as the enclosed Storm Water Best Practices, and Surface Innovations can be Value Engineered.

Attachment A - TO 22-25-005

EPA United States Environmental Protection Agency

Using Smart Growth Techniques as

Stormwater Best Management Practices

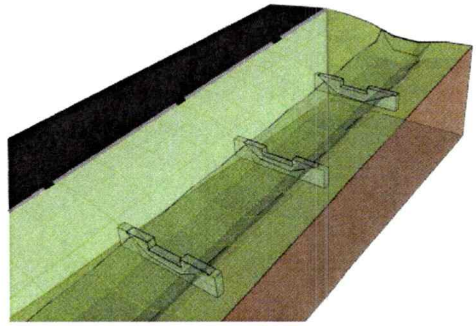
Table 2: Best Management Practices and Development Context

BMP Strategies	Urban/High Density Settings	Suburban/ Urbanizing Areas	Rural and Conservation Areas
Strategies for individual buildings and building sites	Bio-infiltration cells, rooftop rain capture and storage, green roofs, downspout disconnection in older residential neighborhoods, programs to reduce lawn compaction, stormwater inlet improvements	Disconnecting downspouts, green roofs, programs to reduce lawn compaction, bio-infiltration cells, rooftop rain capture and storage	Green roofs, housing and site designs that minimize soil disruption
Low impact development (LID) or better site design strategies	Ultra-urban LID strategies: high-performing landscape areas, retrofitting urban parks for stormwater management, micro-dentention areas, urban forestry and tree canopy, green retrofits for streets	Swales, infiltration trenches, micro-detention for infill projects, some conservation design, retrofitting of parking lots for stormwater control or infill, tree canopy, green retrofits for streets. Depending on location, larger scale infiltration.	Large scale LID: forest protection, source water protection, water protection overlay zoning, conservation, aquifer protection, stormwater wetlands
Infrastructure	Better use of gray infrastructure: repair and expansion of existing pipes, installation of stormwater treatment, fix it first policies, improve street and facilities maintenance	Priority funding areas to direct development, better street design, infrastructure planning to incentivize smart growth development, improve street and facilities maintenance	Smart growth planning for rural communities using onsite systems
Structural BMPs	Commercially available stormwater control devices, urban drainage basins, repair of traditional gray infrastructure	Rain barrels, bio-infiltration techniques, constructed wetlands	
Design strategies	Transit districts, parking reduction, infill, improved use of curbside parking and rights of way, brownfields, urban stream clean-up and buffers, receiving areas for transfer of development rights	Infill, greyfields redevelopment, parking reduction, policies to foster a connected street system, open space and conservation design and rural planning, some impervious surface restrictions, stream restoration and buffers, targeted receiving areas for transfer of development, planned unit developments	Regional planning, use of anti-degradation provision of Clean Water Act, sending areas for transfer of development, watershed wide impervious surface limits, water protection overlay zoning districts
Watershed-wide or regional strategies	Transfer of development rights, waterfront restoration, participation in regional stormwater management planning/infrastructure	Regional park and open space planning, linking new transit investments to regional system, participation in regional stormwater management planning/infrastructure	Regional planning, use of anti-degradation provision of Clean Water Act, sending areas for transfer of development, watershed wide impervious surface limits, water protection overlay zoning districts, water supply planning and land acquisition

Enhanced swales

This article is about installations designed to capture and convey surface runoff along a vegetated channel, whilst also promoting infiltration.
For underground conveyance which promotes infiltration, see Exfiltration trenches.
For conveyance along planted channels, on both surface and underground, see Bioswales.

Contents

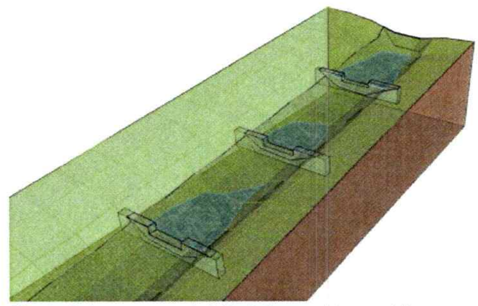


Skeleton schematic illustrating the installation of check dams with centralized, flow concentrating cutouts. Street runoff would enter the swale through sheet flow or curb cuts and flow across the filter strip on the left side of the image. *A note: The following is an "image map", feel free to explore the image with your cursor and click on highlighted labels that appear to take you to corresponding pages on the Wiki.*

Overview

> *Enhanced swales are an ideal technology for:*
>
> - *Sloped sites,*
> - *Cheaply retrofitting and improving the performance of existing grass swales.*

Take a look at the downloadable Enhanced Grass Swales Factsheet below for a .pdf overview of this LID Best Management Practice:



The check dams are spaced slightly further apart than would be recommended to maximize infiltration capacity i.e. ponding isn't quite continuous between the dams.

The fundamental components of an enhanced grassed swale are:

- Graded channel
- Resilient turf grass or other planting
- Check dams, to facilitate short term ponding

Additional components may include:

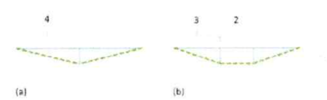
- Amended soil or filter media to increase infiltration to soils below
- Turf reinforcement, to prevent scour

Planning considerations

When planning a new site, all swales and overground flow paths should be fitted perpendicular to existing contours. See Natural drainage and Existing hydrology.

Best cross sections

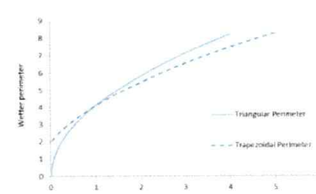
Enhanced swales aim to both reduce the flow rate and retain a portion of the conveyed water. For these purposes the best x-section is that which maximizes the wetted perimeter for a given area. For a given width and depth, the difference between a triangular and trapzoidal section is small. As shown in the diagrams, under low flow conditions the trapezoidal has greater wetted perimeter, and at higher flows the triangular profile does.



Both sections a)triangular and, b)trapezoidal, are constrained within ratios of 8:1 H:V

Safety

As shallow grassed swales are a common roadside construction, the Ministry of Transport has created their own guide to maximum flow depth and freeboard[1][2]. Their advice has been prepared specifically for high risk environments and those stringent constraints should not be applied to all circumstances. In many urban environments the principle of applying check dams to enhance all surface BMPs can be safely used to encourage ponding and subsequent infiltration for a day or two.



At lowest flow rates (smallest area) the trapezoidal swale (b) has the greater wetted perimeter; at higher flow rates (greater area) the triangular geometry (a)has a larger wetted perimeter for same area. Both channels modelled using ratios shown in figure above

Design

All swales should be designed to meet the following criteria:

- Minimum residence time of 5 minutes.
- Maximum flow velocity 0.3 m/s
- Bottom width between 0.6 - 2.4 m
- Minimum length 30 m
- Maximum depth of flow should be 50% height of grass for regularly mown swales, to maximum of 75 mm, or 33% height of vegetation for infrequently mown swales.

Planting Considerations

- Grasses and herbaceous species with dense root structure cover should be favoured along the bottom of the swale for their ability to increase infiltration, stabilize soils, retain pollutants and assist with suspended solids.

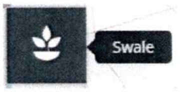
Attachment A - TO 22-25-005

- Enhanced grass swales may be planted with sod or seed. Stabilize swale with erosion control blanket if planting with seed. Include a temporary cover crop in native seed mix.
- The plant material on the slopes of grass channels must be capable of withstanding periodic inundation in addition to extended periods of drought. Species include grasses and groundcovers, as well as low shrub species.
- Plants along the exterior of this zone act to slow the flow during stormwater events, reducing sedimentation and increasing infiltration. The root structure of this plant material also acts to reduce erosion.
- Selected grasses or groundcovers for grassed swales should be allowed to grow between 75 to 150 mm to assist in filtering suspended solids from stormwater. Therefore these species are either shorter naturally, or tolerate periodic mowing.
- When grasses grow taller they have a tendency to flatten down from the water flow.
- Fine, close-growing species provide for good soil stabilization.
- Species are salt-tolerant due to the typical location of grass channels along roadways and parking lots.
- Erosion protection such as river stone or riprap will be required to dissipate the energy from incoming concentrated flow.
- The channel must be vegetated immediately after grading. Preferably, the swale should be planted in the spring so that the vegetation can become established with minimal irrigation.

Modeling

LID LOW IMPACT DEVELOPMENT TREATMENT TRAIN TOOL

It is recommended that grass and enhanced grass swales be modelled using the 'Swale' element in the TTT. A 'swale' has to connect two existing elements within the TTT Bioswales or dry swales, which have amended filter media, should be modelled as bioretention cells. The alternative is to use the 'enhanced swale' within the LID toolbox, but this incorporates fewer design parameters (and doesn't account for infiltration).



Swale element in TTT menu

Weir elements may be incorporated as check dams for detailed design

A 'swale' as a conveyance element in the TTT (key parameters)

General Info	
Upstream Node	Name of node on the inlet end of the swale (higher elevation)
Downstream Node	Name of node on the outlet end of the swale (lower elevation)
Manning's Roughness	Lower numbers indicate less surface obstruction and result in faster flow. Suggested range for mown grass (dependent on density) 0.03 – 0.06 [3]
Upstream Invert (m)	Depth of swale invert above node invert at inlet end of the swale
Downstream Invert (m)	Depth or elevation of the swale invert above the node invert at the outlet end of the swale
Cross section	
Maximum Depth (m)	Depth of the swale
Bottom Width (m)	Bottom width of the trapezoidal swale For a triangular channel, enter 0
Left Side Slope (m/m)	Left side slope (run/rise). Suggested value of 3 or 4 if design permits.
Right Side Slope (m/m)	Right side slope (run/rise). Suggested value of 3 or 4 if design permits.
Seepage (mm/hour)	Infiltration rate of native (or amended) soil

Parameters for 'enhanced swales' in the LID toolbox of the TTT

Surface	
Berm height (mm)	This is the height of the curb which constrains the overland sheet flow of water. Where the bottom of the slope discharges directly into another LID facility without impedance, the value is 0.
Surface roughness (Manning's n)	Lower numbers indicate less surface obstruction and result in faster flow. Suggested range for mown grass (dependent on density) 0.03 – 0.06 [3]
Surface slope (%)	If the slope > 3%, use Check dams to create temporary ponding, increase infiltration, and slow flow to reduce erosion.
Swale side slopes (run/rise)	Suggested value of 3 or 4 if design permits.

Materials

Resilient turf grasses are particularly useful in the design of vegetated filter strips, dry ponds and enhanced grass swales. The Ministry of Transportation have standardized a number of grass mixes[4]. The 'Salt Tolerant Mix' is of particular value for low impact development applications alongside asphalt roadways and paved walkways.

Canada #1 Ground Cover (salt tolerant mix)

Common name	Scientific name	Proportion
Tall Fescue	*Festuca arundinacea*	25 %
Fults Alkali Grass	*Puccinellia distans*	20 %
Creeping Red Fescue	*Festuca rubra*	25 %
Perennial ryegrass	*Lolium perrenne*	20 %
Hard Fescue	*Festuca trachyphylla*	10 %

For advice on aggregates used in underdrains, see Reservoir aggregate.

Stone or gravel can serve as a low maintenance decorative feature, but it may also serve many practical functions on the surface of an LID practice.

Stone for erosion control

Aggregates used to line swales or otherwise dissipate energy (e.g. in forebays) should have high angularity to increase the permissible shear stress applied by the flow of water. [5] However, in some surface landscaped applications there may be a desire to use a rounded aggregate such as 'river rock' for aesthetic reasons. Rounded stones should be of sufficient size to resist being moved by the flow of water. Typical stone for this purpose ranges between 50 mm and 250 mm in diameter. The larger the stone, the more energy dissipation.

- Stone beds should be twice as thick as the largest stone's diameter.
- If the stone bed is underlain by a drainage geotextile, annual inspection and possible replacement should be performed as there is a potential for clogging of this layer to occur.

Stone lining the ponding zone of this rain garden. Image credit California Native Plant Society (https://www.flickr.com/photos/152508454@N05/)

Coarse angular stone laid onto a geogrid and geotextile. Image from wikimedia commons

This rain garden in a school yard uses stone as both decorative edging and for erosion control.

Stone mulch

Finer inorganic mulch materials can be of value applied in areas with extended ponding times i.e. in the the centre of recessed, bowl shaped bioretention, stormwater planters, trenches or swale practices. Inorganic mulches resist movement from flowing water and do not float. Applying a thin layer of inorganic mulch over the top of wood based mulch has been shown to reduce migration of the underlying layer by around 25% [6]. Inorganic mulches which may be available locally, include:

- Pea gravel
- River rock/beach stone
- Recycled glass
- Crushed mussel shells

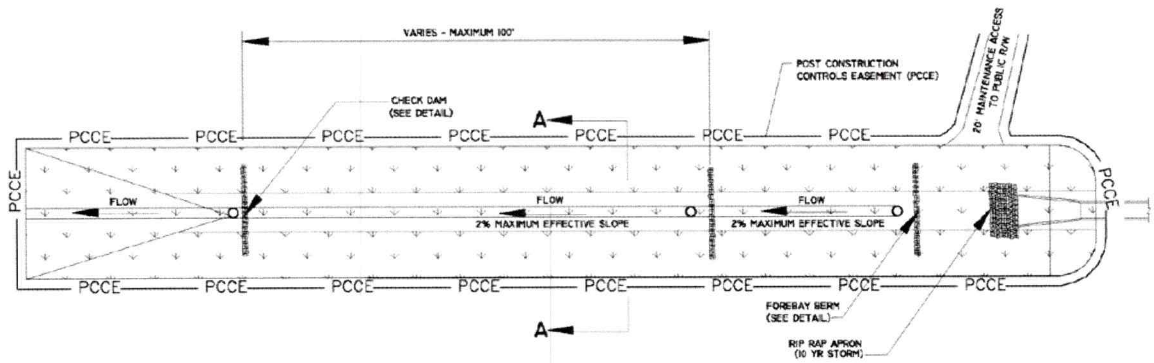
This bioswale in a parking lot uses stone at the inlets and along the bottom of the swale to prevent erosion, as the sides are sloped.

---

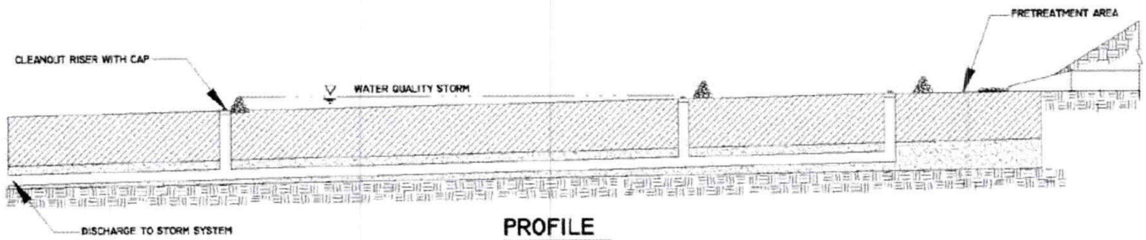
check dams

---

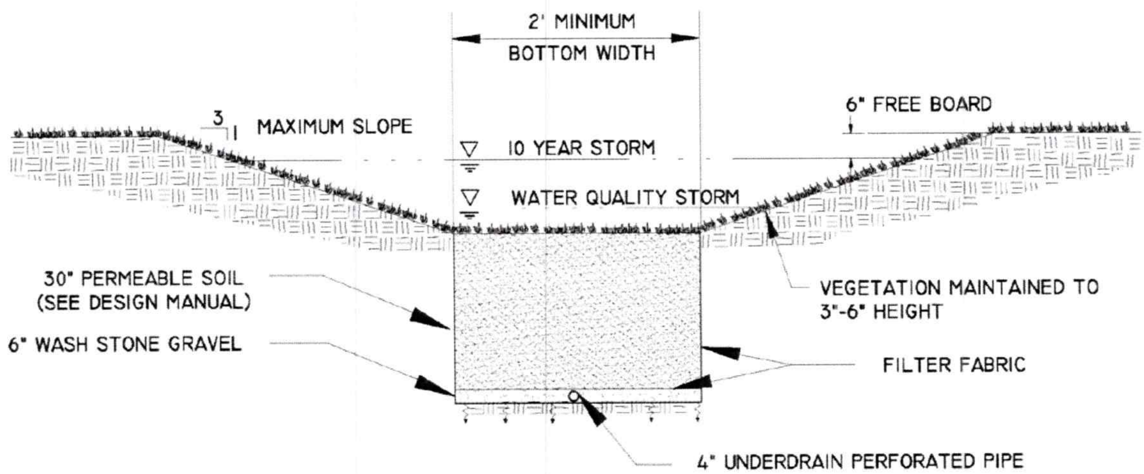
1. Ontario Ministry of Transportation, & Ontario Ministry for Transportation. (2016). Stormwater Management Requirements for Land Development Proposals. Retrieved February 26, 2018, from http://www.mto.gov.on.ca/english/publications/drainage/stormwater/section8.shtml#controls
2. Drainage and Hydrology Section Transportation Engienering Branch Quality and Standards Division. (1997). MTO Drainage Management Manual. Retrieved from http://www.ontla.on.ca/library/repository/mon/12000/198363.pdf
3. Oregon State Univ., Corvallis. Dept. of Civil, Construction and Environmental Engineering.; Environmental Protection Agency, Cincinnati ONRMRL. Storm Water Management Model Reference Manual Volume I Hydrology (Revised). 2016:233.https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100NYRA.txt Accessed August 23, 2017.
4. Ontario Provincial Standard Specification. (2014). Construction Specification and for Seed and Cover OPSS.PROV 804. Retrieved from http://www.raqsb.mto.gov.on.ca/techpubs/ops.nsf/0/3a785d2f480f9349852580820062910a/$FILE/OPSS.PROV 804 Nov2014.pdf
5. Roger T. Kilgore and George K. Cotton, (2005) Design of Roadside Channels with Flexible Linings Hydraulic Engineering Circular Number 15, Third Edition https://www.fhwa.dot.gov/engineering/hydraulics/pubs/05114/05114.pdf
6. Simcock, R and Dando, J. 2013. Mulch specification for stormwater bioretention devices. Prepared by Landcare Research New Zealand Ltd for Auckland Council. Auckland Council technical report, TR2013/056



PLAN VIEW
NOT TO SCALE



PROFILE
NOT TO SCALE



SECTION A-A
NOT TO SCALE

Attachment A - TO 22-25-005

SUPPLEMENTAL INFORMATION
ADDENDUM NO. 1

PROJECT: RFP 22-25-005 – Westwood Heights Drainage Improvements.

CONTACT: Alison Bruton, Purchasing Agent
912-754-2159 abruton@effinghamcounty.org

DATE ISSUED: January 19, 2022

RFP 22-25-005 – Westwood Heights Drainage Improvements dated December 30, 2021 is hereby amended as noted herein: BIDDER TO ACKNOWLEDGE RECEIPT OF ADDENDUM BY SIGNING ON THE SIGNATURE LINE BELOW AND INCLUDING A COPY WITH SUBMITTED BID. FAILURE TO DO SO MAY, AT THE OWNER'S DISCRETION, SUBJECT THE BIDDER TO DISQUALIFICATION

1) QUESTION: Specs said up to three options. Is that still up to 3, or must have 3?
ANSWER: Up to 3.

2) QUESTION: Do you have a level of service that you want to try and get to?
ANSWER: The level of services minimum would be the 25-year storm conveyed to prevent flooding. 25-year flood event meets our current subdivision regulation standards. Other concepts might involve higher storm events, increased detention, water quality, pipe systems v. open ditch, pump stations, etc.

3) QUESTION: Do we want this to just be a design and then a follow-up proposal for additional services and construction management, or do we include those services with our proposal?
ANSWER: See Section 5.1. The scope of work and cost proposal shall include the field work, concept designs, final design / construction documents, bidding, and construction administration.

4) QUESTION: Do we have a budget established for the construction cost?
ANSWER: We do not.

5) QUESTION: Since everyone is on the IDC, can this be a simplified proposal?
ANSWER: Yes, see Section 3.8

6) QUESTION: For the Geotechnical component of the RFP- can the County directly hire the Geotechnical Engineer?
ANSWER: No, the prime consultant will need to handle this.

All other terms and conditions in RFP 22-25-005 remain unchanged.

Effingham County reserves the right to reject any and all proposals, to waive any technicalities or irregularities and to award the offer based upon the most responsive, responsible submission.

Please sign receipt of this Addendum No. 1 below:

Thomas Kennedy [signature] 01/26/22

Print Name Signature Date

END OF ADDENDUM NO. 1