

Project Status Report: CEEEn-2016CPST-01: Development Accommodation Realignment Study

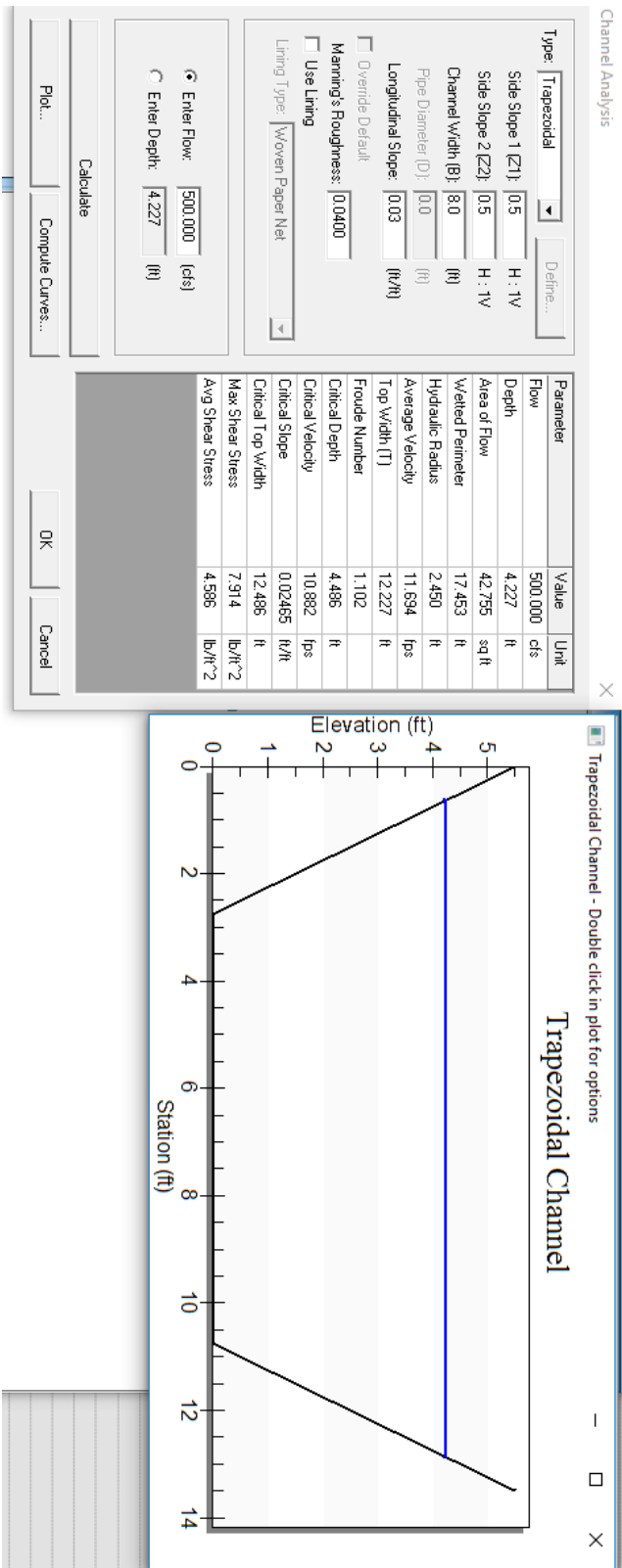
Team Members: Brad Mason, Kevin Woolf, Tavin Griffeth

Date: January 27, 2017

<p>1) Summary of technical/non-technical challenges encountered</p> <ul style="list-style-type: none">• Learning about permitting requirements through the Army Corps of Engineers.• Hydrologic data to verify that the 500 cfs demand is accurate.• Developing a profile of the creek (before and after) to analyze using the Manning's equation.	<p>2) Team approaches/resolutions to overcome challenges</p> <ul style="list-style-type: none">• Upon calling the Army Corps of Engineers and learning about the permitting process, we decided to start developing documents for the permitting process beginning with channel design.• After talking with Michael and with professors, we have started to look into creating our own model using WMS to develop a demand flow. We require training in this program in order to effectively create our own models, as none of us have ever used this program.• We first looked into finding topographic maps in the library, then we used 3D polyline interpolation in ArcMap from online DEM files.
<p>3) Status of challenge resolutions & potential project impacts</p> <ul style="list-style-type: none">• Basic information for permitting process has been recorded. Channel designs and environmental impact must be assessed before further action in the permitting process.• We have started to watch WMS tutorials to learn how to use the software to develop a model for the flow demand.• We have developed profiles of the creek as it is and the proposed new path. A preliminary channel design has been proposed and tested using excel and hydraulic toolbox.	<p>4) Project Status & Summary</p> <ul style="list-style-type: none">• Creek realignment site has been visited and documented. Possible realignment path has been discussed and plotted. Calculations will be performed to determine feasibility.• Channel design is now our first priority. Gathering the documents for permitting has been moved to the end of our schedule due to amount needed for permitting.• Despite schedule changes, the project is progressing as planned.• Creek profiling has been completed and is ready to integrate into modeling calculations.

Appendix

Current Worst-Case Slope Scenario:



Proposed Channel Cross-section Design:

Channel Analysis

Type: **Trapezoidal** Define...

Side Slope 1 (Z1): 0.5 H : 1V
 Side Slope 2 (Z2): 0.5 H : 1V
 Channel Width (B): 6.0 (ft)
 Pipe Diameter (D): 0.0 (ft)
 Longitudinal Slope: 0.02 (ft/ft)

Overide Default
 Manning's Roughness: 0.0400
 Use Lining
 Lining Type: **Woven Paper Nel**

Enter Flow: 500.000 (cfs)
 Enter Depth: 5.618 (ft)

Calculate

Plot... Compute Curves...

Parameter	Value	Unit
Flow	500.000	cfs
Depth	5.618	ft
Area of Flow	49.494	sq ft
Wetted Perimeter	18.563	ft
Hydraulic Radius	2.666	ft
Average Velocity	10.102	fps
Top Width (T)	11.618	ft
Froude Number	0.863	
Critical Depth	5.158	ft
Critical Velocity	11.298	fps
Critical Slope	0.02692	ft/ft
Critical Top Width	11.158	ft
Max Shear Stress	7.012	lb/ft ²
Avg Shear Stress	3.327	lb/ft ²

OK Cancel

