



# 2017 SPLOST Information

## Unincorporated Fayette County SPLOST 2017 Draft for Public Comment



Canterbury Lane



Westbridge Circle



East Lake Drive



Grande Court



*Fayette*  
COUNTY

July 2016



# FAYETTE COUNTY STORMWATER INFRASTRUCTURE IMPROVEMENTS

## DRAFT FOR PUBLIC REVIEW AND COMMENT

Fayette County owns and maintains miles of storm drainage pipe and associated drainage infrastructure for managing stormwater running under Fayette County Roads. This is comprehensively referred to as the Municipal Separate Storm Sewer System and includes items such as: storm drainage pipes; box culverts; gutters; ditches, swales, catch basins and inlets.

A portion of the county’s storm drainage infrastructure needs repairs or replacement due to deterioration of corrugated metal pipe that is approaching or exceeding its expected useful life. Deteriorated, damaged, poorly maintained, and/or undersized pipes and structures can result in potentially serious safety, infrastructure, flooding and environmental problems.

The drainage system improvements identified provides repair and replacement of drainage systems under and adjacent to roadways that have deteriorated to the point where they no longer function as intended.

<b>Category I</b>	<b>TOTAL</b>	<b>\$6,451,659</b>
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**Flooding and Safety:** Replacement or rehabilitation of Stormwater Drainage Systems where failure or improper operation may result in loss of property or probable loss of human life. This includes drainage systems that were damaged during the 2015 Christmas Floods (FEMA Disaster Declaration 4259-DR) and dams classified by the Georgia Safe Dams program that are within Fayette County right-of-way. All projects listed in this category are in need of immediate replacement or have been replaced.

<b>Category II</b>	<b>TOTAL</b>	<b>\$14,145,522</b>
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**Stormwater Infrastructure Preservation Projects Greater than \$25,000:** Deformation or damage of system may affect the drainage capacity or overall function of the structure. These projects have been subcategorized into Tier 1 and Tier 2.

Tier 1 projects are in need of immediate attention.		<b>\$3,705,373</b>
Tier 2 projects are projects that need replacement soon.		<b>\$10,440,149</b>

<b>Category III</b>	<b>TOTAL</b>	<b>\$1,651,211</b>
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**Stormwater Infrastructure Preservation Projects Less than \$25,000:** Deformation or damage of system may affect the drainage capacity or overall function of the structure.

<b>Category IV</b>	<b>TOTAL</b>	<b>\$1,493,249</b>
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**Stormwater Improvement Projects:** Stormwater drainage systems functional improvements.

<b><i>SPLOST 2017</i></b>	<b><i>TOTAL</i></b>	<b><i>\$23,741,641</i></b>
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## Tetra Tech General Assumptions

- 1) Preliminary culvert designs are based on modeling scenario outputs from the HY-8 culvert hydraulic analysis program. A culvert was considered to perform adequately if 100% of flow resulting from a 25-year storm event passes through the culvert without overtopping the road surface. 25-year storm event flows were obtained for each site using the USGS StreamStats Program, which estimates event flows based on a given point's drainage area and relative proximity to existing USGS stream and rainfall gages.
- 2) Utility types, locations, and dimensions at each project site are based on street level visual inspections. No research, subsurface utility engineering (SUE) equipment or contact with utility owners was conducted. Utility relocation costs are based on previous Fayette County SPLOST planning level estimates of common sizes for each utility.
- 3) Easement cost estimates are based on the analysis of a collection of 2014 property sales in the Fayetteville, Georgia area using prices and lot sizes available on the Fayette County Tax Assessors' Office website and the Fayette County GIS portal. A conservative cost of \$4/SF has been applied to the land that is presumed to lie outside of the County's right of way (ROW) for each project's limit of disturbance. This value should account for potential market appreciation over the life of a SPLOST program and the planning level nature of the estimates. Full property appraisal at each location will be required once detailed plans are available.
- 4) Road classifications were obtained from the Fayette County GIS portal. No distinction was made regarding street design standards and specifications. For costing purposes, an asphaltic concrete paving profile was used consisting of a 6" stone base, 3" binder course, and 3" of topping.
- 5) Construction line item costs were assembled from two sources: GDOT's 2015 Item Mean Summary, and the RS Means CostWorks software program using 2015 Cost Data for Atlanta area zipcodes beginning with 302. Unit prices from both sources were increased by 20% to account for small project size, mobilization/demobilization of construction equipment, hauling and disposal costs, and the overall planning level nature of the estimates. Any other construction cost assumptions are noted on individual project sheets.
- 6) Traffic control cost percentage estimates are based on street classification, roadway closure possibility, and the need for public awareness/involvement during construction. Detailed analysis of staging schemes regarding the public use of roads during construction will be required for each site.
- 7) The applied design cost for each site consists of a combination of 10% of the estimated construction cost, an assumption usually reserved for larger projects, and a cost for surveying requirements. Surveying cost estimates stem from previous surveying efforts for culvert construction in Fayette County. A baseline surveying cost of \$5,000 was applied to each site. For project sites designed to handle higher flows and/or those inside FEMA Zone AE (floodway) and Zone A special flood hazard areas, a surveying cost of \$12,500 was applied.

- 8) Environmental efforts are anticipated to be minimal due to the nature of the projects (perpendicular crossing/maintenance project classification) and include wetland delineation, compliance with stream buffers, and minimal permitting. Projects are assumed to be exempt from the Georgia EPD stream buffer variances on the basis of a drainage structure exemption. In addition, projects are assumed to fall under a Nationwide Permit 3A (Maintenance Activity). No ecological investigations were completed for this planning level effort and will be required at the time of the projects to assess actual environmental impacts and costs.

It is assumed that floodplain modeling will be required for all crossings in FEMA-designated Zone AE (floodway) and Zone A special flood hazard areas, but that the crossings will be designed to comply with FEMA requirements for no-rise scenarios. No map revision submittals to FEMA are included in the cost estimates. The FEMA studies are included in the cost estimates. The FEMA studies are included in the environmental cost for each project to which this is anticipated to be required.

Cost levels of Environmental Analysis/Permitting:

\$10,000: minimal environmental efforts as described above.

\$15,000: minimal environmental efforts, FEMA Zone A study required, culvert

\$18,000: minimal environmental efforts, FEMA Zone AE study required, culvert

\$20,000: minimal environmental efforts, FEMA Zone A/AE study required, bridge

- 9) Pipe condition assessment categories:

5: Severe structural damage; >10% loss of flow area; function of structure compromised and failure imminent

4: Significant signs of exterior and structural deterioration; some loss of flow area

3: Signs of exterior deterioration but structurally functioning

2: Minor signs of deterioration; primary flow area in tact and functioning

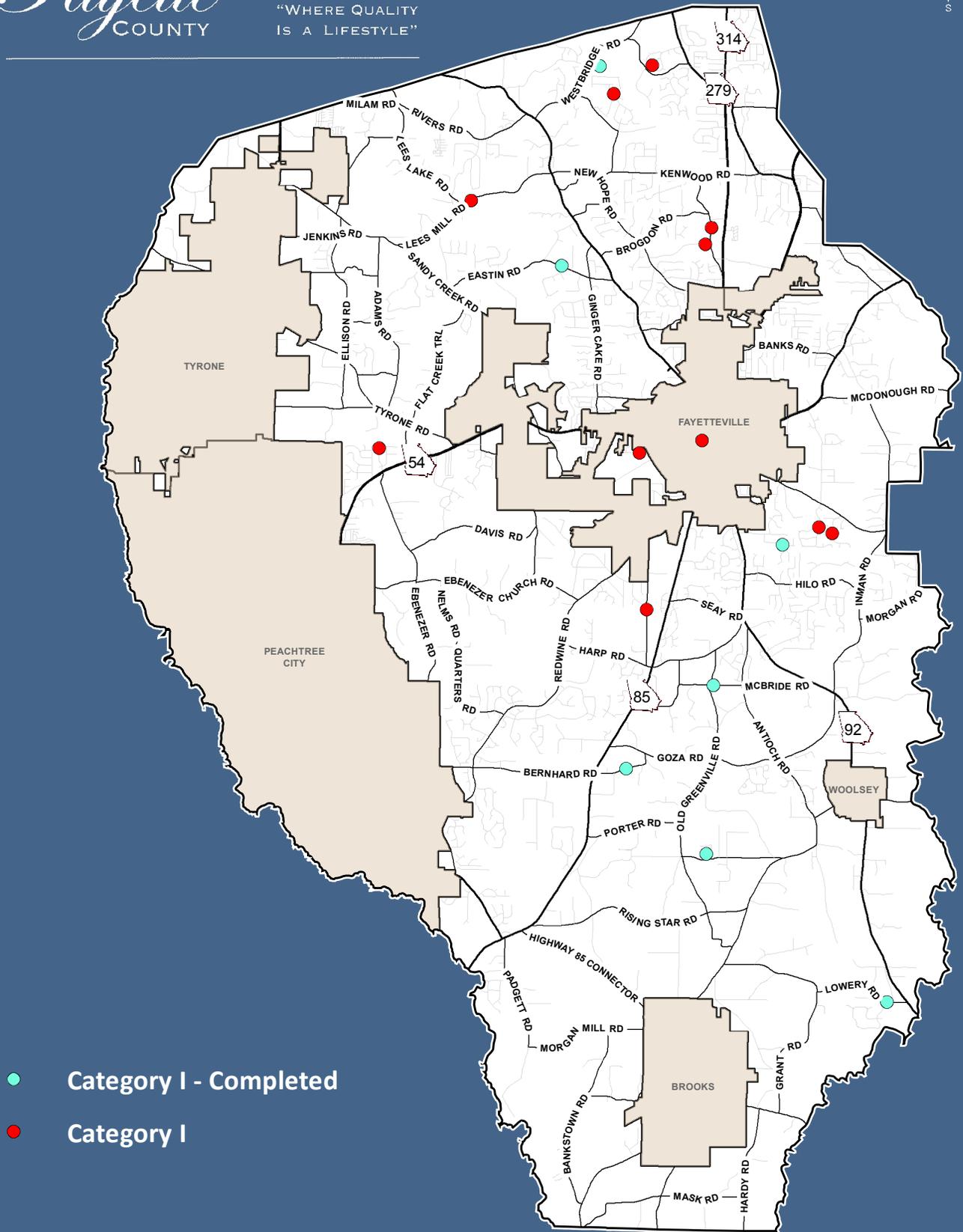
1: System performing as designed and in good condition





Fayette  
COUNTY

"WHERE QUALITY  
IS A LIFESTYLE"





# CATEGORY I

PROJECT NAME	PROJECT DESCRIPTION	ESTIMATED COST
210 Antebellum Way	Antebellum Way is a one-way in and out street. Excessive pipe damage, due to Christmas Flood event severely impaired stream flow and caused upstream flooding. Double 84 in.-diameter corrugated metal pipes are bent, restricting flow and are washing out around the inlets. This project includes design and construction to replace with a larger system, possibly box culverts.	\$481,581
104 Broom Blvd	This project will replace an existing 36-inch corrugated metal pipe with double 8' x 5' concrete box culverts. The system and road were damaged during the December 2015 floods. Temporary repairs were made to keep the road open but pipe replacement is needed for structural and capacity issues. Broom Blvd. is the sole access for 13 homes.	\$387,880
Emerald Lake Dam	Emerald Lake Dam is a Georgia Safe Dams Program Category II structure located predominantly within Fayette County Right-of-Way. Work is needed to address flow capacity and structural integrity issues. The project includes design, permitting, and construction of a new labyrinth spillway and associated roadwork. As of January 2016, design work is 80% complete. New cost estimate of \$2,064,000 is based on 20% increase of Engineer's Order of Magnitude estimate. Price increase is due to identification of poor subsoils, which require more excavation and a more complicated traffic management plan.	\$2,064,000
287 Graves Road	Road and shoulder washed out around a 60 in. diameter corrugated metal pipe during the 2015 Christmas floods. The proposed design to address capacity problems is to replace the metal pipe with a 10 ft. X 5 ft. reinforced concrete box culvert.	\$293,538
Heritage Park Way	Heritage Park Way is the only road owned by Fayette County that is located in Fayetteville city limits. This project will replace a failing 60-in diameter corrugated metal pipe that connects to stormwater pipe under State Route 85 and a failing 18-in diameter cross pipe that is also part of the system. The proposed design will address flooding issues that routinely occur on Heritage Park Way.	\$98,397
Kozisek Dam	Kozisek Dam is a Safe Dams Program Category I structure adjacent to and possibly partially within the County Right-of-Way for Neely Road. The project includes evaluation, design, permitting, and construction of necessary improvements and changes to Neely Road to ensure it safely passes design flows and to remove any County liability/ownership that may be associated with Kozisek Dam.	\$250,000
413 Lees Mill Rd	During the 2015 Christmas flood event Tar Creek came above and covered three, 72-inch diameter pipes causing excessive damage. This project will consist of evaluation, design and construction to upsize the drainage capacity to allow passage of the 100 year storm event. This project is located in FEMA Zone AE and a large water main is located near the pipes as well.	\$511,849



# CATEGORY I

PROJECT NAME	PROJECT DESCRIPTION	ESTIMATED COST
Longview Dam	Longview Dam (AKA Margaret Phillips Lake Dam) is a Safe Dams Program Category I structure located within the Fayette County Right-of-Way of Longview Road. The project consists of performing the necessary evaluation, design, permitting, and construction to bring the structure into compliance with the Georgia Safe Dams Act of 1978. There are two options to do so: upgrade the dam or breach the dam. A 2013 Order of Magnitude cost estimate to upgrade the dam is provided. The preferred option of breaching the dam would be less. However, it is unknown at this time which option will be instituted, a estimate of half the cost to upgrade the dam is listed.	\$704,907
330 Oak St	Located in the County portion of Deep Forest subdivision. This project includes performing design, permitting and construction of upgrades to an Oak Street cross-drain to reduce the risk of flooding.	\$78,506
Old Senoia Rd	Three 96 in. diameter corrugated metal pipes draining Perry Creek. Pipe bottoms have failed and washout underneath the road occurred during the Christmas Flooding event. Temporary corrections made to allow both lanes to function. Project includes evaluation, design, environmental permitting and construction of replacement. Evaluation will include possible bridge design. Estimate based on 2013 possible bridge design adding 15 percent for increased costs and flood repair costs incurred by the county.	\$668,572
121 Rising Star Rd	During the December 2015 floods, these two, 72-inch diameter corrugated metal pipes located near the intersection with Brooks-Woolsey Road, were damaged, jeopardizing the integrity of the road and utilities. Temporary measures were taken to reopen the road but pipe replacement is required. This project consists of evaluation, design and construction of an upsized system. The design is complicated by backwater conditions caused by the drainage system under Brooks Woolsey Road.	\$449,143

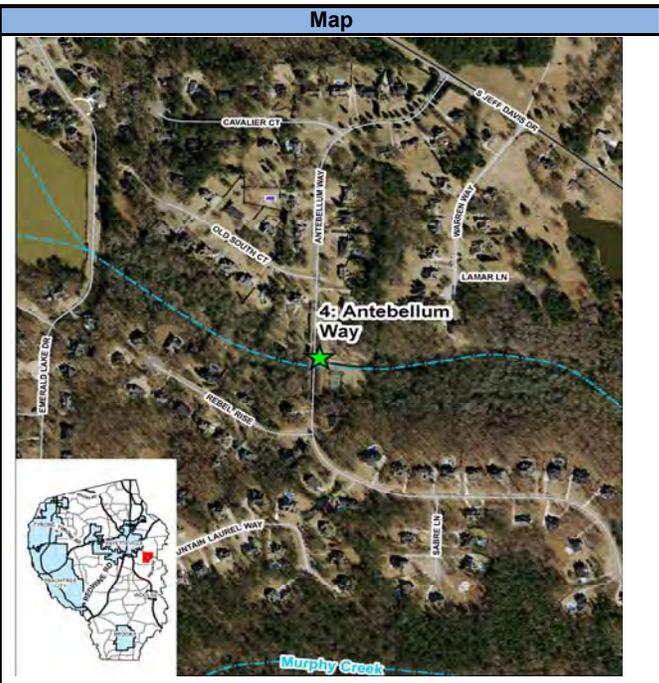


# CATEGORY I

PROJECT NAME	COMPLETED PROJECT DESCRIPTION	Cost
228 Bernhard Rd	Washout around an undersized 36 in. diameter corrugated metal pipe inlet caused shoulder and pipe failure. Temporary repairs measures allows for continued road use but pipe replacement is needed. This projects consists of replacing the current pipe with a 42 in. reinforced concrete pipe and headwalls.	\$44,947
Brittany Way	Project completed in 2014. Work included installation of a new 6'x4' box culvert.	\$67,432
105 Canterbury Ln	On Christmas Eve 2015, approximately 60 homes within the Chanticleer Subdivision were without water and had no access to and from their homes when a 72-inch diameter corrugated metal pipe failed, collapsing the road. Emergency pipe replacement was complicated by needing equipment to install a large pipe and the emergency occurring over a holiday weekend. The work is complete.	\$101,636
110 Lawson Ln	Undersized pipes in Northridge Subdivision resulted in flooding of road, lots and several homes along Lawson Lane. This project, completed early 2015, replaced existing pipe and added additional drainage structures.	\$94,509
144 Lowery Rd	Washout around the 54 in. diameter corrugated metal pipe caused shoulder and pipe failure. Temporary measures installed allows for road use. This projects consists of replacing the current pipe with a 60 in. reinforced concrete pipe and headwalls.	\$44,523
456 McBride Rd	Washout around the 54 in. diameter corrugated metal pipe caused complete road failure on McBride Road west of Old Greenville Road. Temporary measures installed allows for road use. This projects consisted of installing a 54 in. reinforced concrete pipe and headwalls.	\$41,820
155 Westbridge Cir	Westbridge Circle is an internal local road within Westbridge Acres subdivision. A tributary to Morning Creek runs through the subdivision and under Westbridge Circle. During the 2015 Christmas and New Years flooding events two-36 in. diameter corrugated metal pipes failed causing immanent road failure. Emergency pipe replacement was required to maintain access to homes located "upstream" of the pipe crossing with no means of ingress or egress other than Westbridge Circle.	\$68,419
<b>CATEGORY I TOTAL</b>		<b>\$6,451,659</b>



General Information	
Project ID	
Street Name	210 Antebellum Way
Site Visit Date	6/9/16
Road Classification	Internal Local
Project Notes	
Subdivision Typical Section;	
Field Notes	
Design (Existing Site Features)	
Existing Road Laneage	2-12'
Existing Shld Width (paved and grass) (feet)	6' Grass
Existing Side Slopes	2:1
Existing Guardrail	None
Depth fm Pavement to Top of Culvert (ft):	3
Pipe Type and Size	2 - 84" CMP
Pipe Condition (1-5) (1 is new)	4
Condition Notes:	
Pavement Type/Condition	Asphalt/Good
Environmental Features	
Wetlands	No
Ditches	No
Utilities (Visual Inspection)	
Electric	Underground
Cable	Underground
Phone	Underground
Gas	Underground
Water	Underground
Sewer	None
Other	



Stage Construction Options	
Close Location to Traffic	
Maintain One Lane - No Temp Pavement	
Maintain One Lane - Temp Pavement	
Stage Construction Notes:	

Proposed Design	
Roadway Section	
Proposed Design	Double 8' x 12' box culverts
Utility Relocations	Electric, phone, water, cable, gas
Guardrail Replacement	
Miscellaneous Features	Catch Basins

Planning Cost Estimate		
Type	Notes	Total
Design	Actual Cost including Environmental Permitting	\$61,805
Right of Way Cost		\$12,000
Utility Relocation Cost	Utility poles and aerial phone wires	\$26,070
Construction Cost	1/2 acre clearing and grubbing, Guardrails	\$381,706

<b>Total Planning Estimate</b>	<b>\$481,581</b>
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**Photo 1:**



**Photo 2:**

**Antebellum Way**

**Photo Date:**

1/05/2016

**Taken By:**

Tony Hicks

**Page:**

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## Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1,536.00	\$ 8,609.79
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	40.00	\$ 2,018.40
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
Subtotal				\$ 18,994.59
Grading Complete (5% of Rwy Items & Dmng Total \$)				\$ 11,456.45
County Temporary Emergency Work				\$ 19.00
<b>Roadway Total</b>				<b>\$ 30,470.04</b>

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	586.67	\$ 6,089.60
84" CMP (LF)	\$ 63.00		120.00	\$ 22,680.00
96" RCP		\$ 455.00	0.00	\$ -
Class A Conc (CY)		\$ 892.19	166.90	\$ 148,904.39
Box Culvert Wingwalls, Parapetes (CY)		\$ 892.19	92.80	\$ 82,795.05
Steel (lb)		\$ 1.42	16,626.20	\$ 23,542.70
Pipe Bedding (CY)		\$ 48.60	41.50	\$ 2,016.90
Trench Backfill (CY)		\$ 2.99	521.17	\$ 1,557.25
Trench Compaction (CY)		\$ 6.36	416.93	\$ 2,651.70
Drainage Total				\$ 290,237.58

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -
Signing and Marking Total			\$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.50	\$ 5,130.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	3.00	\$ 13,284.00
Staging Total			\$ 18,414.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	36.00	\$ 140.54
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	660.00	\$ 2,795.76
Check Dam Type C Silt Fence (LF)	\$ 6.79	660.00	\$ 4,482.72
Erosion Control Mats (SY)	\$ 1.87	220.00	\$ 411.84
Landscape Mulch (SY)	\$ 3.58	220.00	\$ 786.72
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	85.33	\$ 5,203.97
Plastic Filter Fabric (SY)	\$ 5.72	85.33	\$ 488.45
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>			<b>\$ 14,310.00</b>

**Construction Cost Total \$ 353,431.62**

**Traffic Control (8% of Construction Total \$) \$ 28,274.53**

**Construction Cost Grand Total \$ 381,706.15**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	60.00	\$ 5,940.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	60.00	\$ 4,290.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	60.00	\$ 4,290.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	60.00	\$ 4,950.00
Water				
8" main	\$ 16.50	\$ 93.50	60.00	\$ 6,600.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
Utility Relocation Total				\$ 26,070.00

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	3,000.00	\$ 12,000.00
<b>ROW Total</b>			<b>\$ 12,000.00</b>



General Information		Map	
Project ID			
Street Name	Broome Blvd.		
Site Visit Date	5/21/13		
Road Classification	Minor road		
Project Notes			
Rural Typical Section			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2 - 12'		
Existing Shld Width (paved and grass) (feet)	2		
Existing Side Slopes	flat		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	4		
Pipe Type and Size	3.5x2.5 egg CMP		
Pipe Condition (1-5) (1 is new)	5		
Condition Notes: crushed headwall and pipe entrance			
Pavement Type/Condition	Asphalt/Poor		
Environmental Features		Stage Construction Options	
Wetlands		Close Location to Traffic	
Ditches		Maintain One Lane - No Temp Pavement	
		Maintain One Lane - Temp Road	X
Utilities (Visual Inspection)		Stage Construction Notes:	
Electric	Aerial		
Cable	Aerial		
Phone	Aerial		
Gas			
Water	Buried		
Sewer			
Other			
Proposed Design			
Roadway Section	Typical. For costing purposes, temporary road consists of 8" gravel fill		
Culvert Size & Material	dbl 8' x 5' box, concrete, 70' length. Cost of removing 2.5' x 2.5' elliptical CMP assumed equal to 36" round CMP. Cost of removing headwalls assumed equal to removal of entire length of pipe.		
Utility Relocations	Cable, telephone, water		
Guardrail Replacement			
Miscellaneous Features	Upstream bend in stream adjacent to roadway may need additional bank stabilization		
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$38,940	
Right of Way Cost	Assuming project extends 12,000 sf beyond ROW	\$48,000	
Utility Relocation Cost	Buried and aerial utilities	\$25,300	
Construction Cost	5 acre clearing and grubbing, additional stabilization/diversi	\$264,404	
Environmental Permits and Engineer of Record Admin	Assuming minimal environmental permitting required	\$11,236	
<b>Total Planning Estimate</b>		<b>\$387,880</b>	





**Photo 1:**



**Photo 2:**

**Broome Blvd**

**Photo Date:**

1/05/2016

**Taken By:**

Public Works

**Page:**

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**Roadway Construction, Utility Relocation and ROW Quantity Calculations**

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	432.00	\$ 2,421.50
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	625.00	\$ 33,735.00
End Anchorage (EA)		\$ 1,380.00	2.00	\$ 2,760.00
Subtotal				\$ 38,916.50

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 9,676.63

**Roadway Total \$ 49,963.13**

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	373.33	\$ 3,875.20
36" CMP (LF)	\$ 19.62		140.00	\$ 8,240.40
36" RCP		\$ 134.40	0.00	\$ -
Class A Conc (CY)		\$ 892.19	132.51	\$ 118,223.83
Steel (lb)		\$ 1.42	13,383.00	\$ 18,950.33
Pipe Bedding (CY)		\$ 48.60	48.00	\$ 2,332.80
Trench Backfill (CY)		\$ 2.99	370.67	\$ 1,107.55
Trench Compaction (CY)		\$ 6.36	296.53	\$ 1,885.95

Drainage Total \$154,616.06

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	72.00	\$ 50.98

Signing and Marking Total \$ 50.98

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.20	\$ 2,052.00
Temporary Gravel Road (SY)	\$ 15.42	977.78	\$ 15,077.33
Temporary Drainage (Stream Diversion)	\$ 4,428.00	2.00	\$ 8,856.00

Staging Total \$ 26,087.29

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	92.00	\$ 404.06
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	560.00	\$ 2,372.16
Check Dam Type C Silt Fence (LF)	\$ 6.79	560.00	\$ 3,803.52
Erosion Control Mats (SY)	\$ 1.87	560.00	\$ 1,048.32
Landscape Mulch (SY)	\$ 3.58	560.00	\$ 2,002.56
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	48.00	\$ 2,927.23
Plastic Filter Fabric (SY)	\$ 5.72	48.00	\$ 274.75
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

**Erosion Control Total \$ 12,832.61**

**Construction Cost Total \$243,550.07**

**Traffic Control (8% of Construction Total \$) \$ 19,484.01**

County Emergency Roadway Work \$ 1,370.00

**Construction Cost Grand Total \$264,404.07**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	100.00	\$ 7,150.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	100.00	\$ 7,150.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	100.00	\$ 11,000.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
Utility Relocation Total				\$ 25,300.00

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	12,000.00	\$ 48,000.00
<b>ROW Total</b>			<b>\$ 48,000.00</b>





**EMERALD LAKE DAM  
ORDER OF MAGNITUDE  
OPINION OF CONSTRUCTION COST  
40 FT. LABYRINTH & RAISE DAM**

Description	Quantity	Units	Unit Price	Cost
<b>40 FT. LABYRINTH &amp; RAISE DAM</b>				
Mobilization	1	LS	\$25,000.00	\$25,000
Erosion Control	1	LS	\$20,000.00	\$20,000
Clearing & Grubbing	1.5	AC	\$5,000.00	\$7,500
Demolition of Roadway, Curbing, Flumes.etc.	1.0	LS	\$25,000.00	\$25,000
Control of Water	1	LS	\$30,000.00	\$30,000
Demolition of Riser, Control Box & Culverts	1	LS	\$20,000.00	\$20,000
Demolish Riprap & Misc, Concrete	1	LS	\$10,000.00	\$10,000
Slipline 30" CMP	140	LF	\$100.00	\$14,000
Pressure Grouting Annulus	140	LF	\$190.00	\$26,600
New Gate Structure	1	EA	\$15,000.00	\$15,000
Under Drain Sand	40	TN	\$50.00	\$2,000
Under Drain # 89 Stone	40	TN	\$39.50	\$1,580
Under Drain # 57 Stone	90	TN	\$39.50	\$3,555
Under Drain Pipe	400	LF	\$20.00	\$8,000
Concrete	485	CY	\$1,000.00	\$485,000
Earthwork	8,000	CY	\$10.00	\$80,000
Grassing	8,300	SY	\$2.50	\$20,750
Rip Rap	560	TN	\$80.00	\$44,800
Blanket / Chimney Drain	1,750	TN	\$50.00	\$87,500
Toe Drain	620	LF	\$80.00	\$49,600
Toe Drain Outlets / Clean Outs	5	EA	\$2,500.00	\$12,500
Roadway Construction (5" A + 8" G)	2,550	SY	\$27.00	\$68,850
Bridge	1,764	SF	\$200.00	\$352,800
<b>SUBTOTAL</b>				<b>\$1,410,035</b>
GENERAL CONDITIONS (7%)				\$98,702
OVERHEAD & PROFIT (15%)				\$211,505
<b>SUBTOTAL</b>				<b>\$310,208</b>
<b>Total Estimated Construction Cost Budget</b>				<b>\$1,720,243</b>

The American Association of Cost Engineers recommends dividing engineering construction cost estimates into three basic categories: Order-of-Magnitude, Budget and Definitive Estimates. The Order of Magnitude Estimate is defined as follows:

This is an estimate made without detailed engineering data. Examples are estimate from cost-capacity curves, an estimate using scale-up or scale-down factors and an approximate ratio estimate. This type of estimate would be accurate within +50 percent to -30 percent.

**COST ESTIMATE REVISION BY FAYETTE COUNTY**

Order-of-Magnitude Construction Estimate from Walden, Ashworth and Associates Inc.	\$1,720,243
Further excavation and more complicated traffic management - (+20%)	\$343,757
<b>TOTAL</b>	<b>\$2,064,000</b>



*Where Quality Is A Lifestyle*

TO: Steve Rapson, County Administrator

FROM: Phil Mallon, Public Works

DATE: July 18, 2016

RE: Emerald Lake Dam – Options for Repair Update

### **Background**

Emerald Lake Dam in the Woodlands Subdivision is classified by the Georgia Safe Dams Program as a Category 2 structure. It is approximately 600 feet long and impounds a 20-acre lake. Emerald Lake Drive is located on top of the dam and is the only means of ingress and egress for the 90+ homes within the subdivision. Fayette County owns and operates the dam.

Significant work is needed on the dam in a timely manner. The most pressing issue is active and on-going seepage erosion around the dam's principal spillway. Repair work is needed on these pipes immediately. Other maintenance and repair items include, but are not limited to: removal of vegetation, control of seepage, outlet stabilization, repair of riser pipe, and extension of the dam's back slope.

A long-term consideration is the future classification of the dam by the Georgia Safe Dams Program. County staff, third-party engineers, and the Safe Dams Program all believe a reclassification to Category 1 standards is likely. If this occurs, Fayette County would have to:

- Upgrade the dam;
- Breach the dam;
- Modify the dam to remove the downstream flood risk; or
- Remove or modify the downstream structures at risk.

Fayette County authorized Walden, Ashworth & Associates to serve as the "Engineer of Record" for this project and develop options for County review. Their findings are summarized below.

### **Findings**

Walden collected field data from the dam and surrounding land, including a geotechnical investigation. They also reviewed the project's records and ran hydrology and hydraulic models for the watershed and outlet controls. Their work confirmed that the existing structure is

designed to pass flows associated with the 24-hour, 10-year storm event. Larger storms will result in the dam being overtopped. That is, during any year, there is less than a 10 percent chance that the road will be overtopped and access limited (or prohibited) into and out of the subdivision.

Ultimately, four options were identified and an Order-of-Magnitude estimate was developed for each. Staff reviewed these options and narrowed the list to two alternatives.

***Slip-line Existing Pipes & Install a Seepage Drain*** – This option addresses the immediate repair and maintenance needs of the dam. It includes clearing and grubbing, draining the lake, water control, slip-lining the five 80-ft long corrugated metal pipes (48” diameter each), pressure grouting around the pipes, installation of a new riser pipe, installation of comprehensive drain system, and stabilization. The estimated construction cost for this work is \$694,000.

Advantages of this option include a substantially lower cost, resolution of immediate structural issues, and minimal impacts to traffic during construction. This option, however, does not improve the hydraulic capacity of the dam; so the probability of the road being overtopped remains as it currently is. Furthermore, the work associated with slip-lining the pipes (approximately 25% of the total project cost) plus some of the grading, stabilization and other tasks would have to be modified or replaced if the dam is classified as a Category 1 structure in the future.

***40-ft Labyrinth Weir & Raise Dam*** – This option also addresses the immediate repair and maintenance needs of the dam plus substantially increases the hydraulic capacity of the structure. Work items include: clearing & grubbing; draining the lake; water control; demolition of roadway, pipes, and concrete weir; construction of 40-ft labyrinth weir; placement of bridge over weir; roadway reconstruction; installation of a new riser pipe; installation of comprehensive drain system; and stabilization.

This option address immediate structural issues and substantially increases flow capacity of the dam. The new outlet control would be designed to meet Category 1 standards so no re-work of the outlet control and spillway is anticipated. This option also reduces the chance of road overtopping to less than 1 percent per year.

The original estimated construction cost for this work was \$1,720,000. The weir, bridge and road reconstruction account for over \$900,000. Further engineering design work has identified poor subsoils which will result in more excavation and a more complicated traffic management plan. Because of these issues a new estimate based on a 20 percent increase of the Engineer’s Order of Magnitude estimate is advised. This increases the estimated cost from \$1,720,243 to an estimated \$2,064,000.

### ***Recommendation***

Staff recommends the 40-ft labyrinth weir option. Although nearly 2.5 times the cost this options provides the triple benefit of 1) repairing immediate needs; 2) reducing the probability of stranding homeowners during flood events; and 3) meeting Category 1 standards should they become applicable.



General Information		Map	
Project ID			
Street Name	287 Graves Road		
Site Visit Date	1/05/16		
Road Classification	Minor arterial		
Project Notes			
Rural Typical Section			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)	2'		
Existing Side Slopes	2:1 - 4:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	6		
Pipe Type and Size	60" CMP		
Pipe Condition (1-5) (1 is new)	5		
Condition Notes: No headwall; debris US, signs of rusting, DS bottom of pipe damaged, no significant structural loss			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands	None		
Ditches	Noted		
Utilities (Visual Inspection)			
Electric	Aerial		
Cable	Aerial		
Phone	Aerial		
Gas			
Water	Buried		
Sewer			
Other			
Stage Construction Options			
Close Location to Traffic		X	
Maintain One Lane - No Temp Pavement			
Maintain One Lane - Temp Pavement			
Stage Construction Notes: If cannot close then have one lane open; two driveways near culvert			
Proposed Design			
Roadway Section	Typical		
Culvert Size & Material	10' x 5' box, concrete, 70' length		
Utility Relocations	Electric, cable, phone, water		
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$28,319	
Right of Way Cost	Assuming project extends 2,000 sf beyond ROW	\$8,000	
Utility Relocation Cost	Aerial and buried utilities	\$14,025	
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$233,193	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$293,538</b>	



**Photo 1:**



**Photo 2:**

**287 Graves Road**

**Photo Date:**

12/29/2015

**Taken By:**

V.T. Birrell

**Page:**

**1**

**Roadway Construction, Utility Relocation and ROW Quantity Calculations**

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	288.00	\$ 1,614.34
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	-
Drain Inlet (EA)		\$ 3,000.00	0.00	-
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	-
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	-
End Anchorage (EA)		\$ 1,380.00	0.00	-
Subtotal				\$ 1,614.34

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 9,731.59

Roadway Total \$ 11,345.93

Drainage	\$ 5.00	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	373.33	\$ 3,875.20
60" CMP (LF)	\$ 24.60		70.00	\$ 5,166.00
60" RCP (LF)		\$ 259.20	0.00	-
Class A Conc (CY)		\$ 892.19	172.26	\$ 153,688.30
Steel (lb)		\$ 1.42	17,995.00	\$ 25,480.92
Pipe Bedding (CY)		\$ 48.60	32.00	\$ 1,555.20
Trench Backfill (CY)		\$ 2.99	402.67	\$ 1,203.17
Trench Compaction (CY)		\$ 6.36	322.13	\$ 2,048.77

Drainage Total \$ 193,017.56

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	48.00	\$ 33.98
Signing and Marking Total			\$ 33.98

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00
Staging Total			\$ 5,521.97

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	61.33	\$ 269.38
Temporary Grassing (AC)	\$ 855.60	0.00	-
Type C Silt Fence (LF)	\$ 4.24	280.00	\$ 1,186.08
Check Dam Type C Silt Fence (LF)	\$ 6.79	280.00	\$ 1,901.76
Erosion Control Mats (SY)	\$ 1.87	93.33	\$ 174.72
Landscape Mulch (SY)	\$ 3.58	93.33	\$ 333.76
Perm Grassing (AC)	\$ 1,402.20	0.00	-
Rip Rap Type 3 12" (SY)	\$ 60.98	32.00	\$ 1,951.49
Plastic Filter Fabric (SY)	\$ 5.72	32.00	\$ 183.17
4" Ditch Paving (SY)	\$ 54.65	0.00	-

**Erosion Control Total \$ 6,000.35**

**Construction Cost Total \$ 215,919.80**

**Traffic Control (8% of Construction Total \$) \$ 17,273.58**

**Construction Cost Grand Total \$ 233,193.38**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	50.00	\$ 3,300.00
Buried	\$ 16.50	\$ 82.50	0.00	-
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Phone				
Aerial	\$ 11.00	\$ 27.50	50.00	\$ 1,925.00
Buried	\$ 16.50	\$ 55.00	0.00	-
Wooden Pole	\$ 82.50	\$ 605.00		-
Cable				
Aerial	\$ 11.00	\$ 27.50	50.00	\$ 1,925.00
Buried	\$ 16.50	\$ 55.00	0.00	-
Wooden Pole	\$ 82.50	\$ 605.00		-
Gas				
4" main	\$ 16.50	\$ 66.00		-
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		-
Sewer			0.00	-
12" main	\$ 16.50	\$ 82.50	0.00	-
Utility Relocation Total				\$ 14,025.00

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	2,000.00	\$ 8,000.00
<b>ROW Total</b>			<b>\$ 8,000.00</b>



General Information		
Project ID		
Street Name	Heritage Park Way	
Site Visit Date	6/9/2016	
Road Classification	Street	
Project Notes		
Heritage Park Way is the only county-owned road in the City of Fayetteville and therefore, maintained by the County.		
Field Notes		
Design (Existing Site Features)		
Existing Road Laneage	2-8'	
Existing Shld Width (paved and grass) (feet)	16'	
Existing Side Slopes		
Existing Guardrail	None	
Depth fm Pavement to Top of Culvert (ft):	4'	
Pipe Type and Size	60" CMP	
Pipe Condition (1-5) (1 is new)	5	
Pipe failure from junction box at S Glynn Street and Heritage Park Way. System ties into 18- in. diameter corrugated metal cross pipe on Heritage, where flooding routinely occurs due insufficient pipe		
Pavement Type/Condition	Asphalt/Concrete	
Environmental Features		
Wetlands	no	
Ditches	no	
State Waters	no	
Utilities (Visual Inspection)		
Electric	Unknown	
Cable	Unknown	
Phone	Unknown	
Gas	Unknown	
Water	Unknown	
Sewer		
Other	Curb and gutter	
Proposed Design		
Roadway Section	Street	
Culvert Size & Material	60" RCP with junction box; 24" RCP with double-wing catch basins	
Utility Relocations	Removal/replacement drain inlets, buried cable.	
Guardrail Replacement		
Miscellaneous Features	tree removal	
Planning Cost Estimate		
Type	Notes	Total
Design	10% of Construction Cost and any surveying needed	\$0
Right of Way Cost		\$0
Utility Relocation Cost	It is assumed all utilites will be relocated	\$41,899
Construction Cost		\$56,498
Environmental Permits		\$0
<b>Total Planning Estimate</b>		<b>\$98,397</b>

Map	
Stage Construction Options	
Close Location to Traffic	
Maintain One Lane - No Temp Pavement	X
Maintain One Lane - Temp Pavement	
Stage Construction Notes:	



**Roadway Construction, Utility Relocation and ROW Quantity Calculations**

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	154.00	\$ 863.22
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	65.00	\$ 3,845.40
DWCB		\$ 1,520.00	2.00	\$ 3,040.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	0
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	0
End Anchorage (EA)		\$ 1,380.00	0.00	0
Subtotal				\$ 7,748.62
Grading Complete (5% of Rwy Items & Dmg Total \$)				\$ 2,491.09
<b>Roadway Total</b>				<b>\$ 10,239.71</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	391.11	\$ 4,059.73
60" CMP (LF)	\$ 24.60		88.00	\$ 2,164.80
60" RCP (LF)		\$ 223.12	88.00	\$ 19,634.56
24" RCP (LF)		\$ 36.45	12.00	\$ 437.44
Class A Conc (CY)		\$ 892.19	0.00	-
Steel (lb)		\$ 1.42	0.00	-
Pipe Bedding (CY)		\$ 48.60	0.00	-
Trench Backfill (CY)		\$ 2.99	5280.00	\$ 15,776.64
Trench Compaction (CY)		\$ 6.36	0.00	-
<b>Drainage Total</b>				<b>\$ 42,073.17</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00		\$ -
Temporary Pavement				0
Temporary Drainage (Stream Diversion)		\$ 4,428.00		\$ -
<b>Staging Total</b>				<b>\$ -</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	0.00	\$ -
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	0.00	\$ -
Check Dam Type C Silt Fence (LF)		\$ 6.79	0.00	\$ -
Erosion Control Mats (SY)		\$ 1.87	0.00	\$ -
Landscape Mulch (SY)		\$ 3.58	0.00	\$ -
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	0.00	\$ -
Plastic Filter Fabric (SY)		\$ 5.72	0.00	\$ -
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ -</b>
<b>Construction Cost Total</b>				<b>\$ 52,312.88</b>
Traffic Control (8% of Construction Total \$)				\$ 4,185.03
<b>Construction Cost Grand Total</b>				<b>\$ 56,497.92</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
<b>Electric</b>				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	88.00	\$ 8,712.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
<b>Phone</b>				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	88.00	\$ 6,292.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
<b>Cable</b>				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
<b>Gas</b>				
4" main	\$ 16.50	\$ 66.00	80.00	\$ 6,600.00
<b>Water</b>				
8" main	\$ 16.50	\$ 93.50	80.00	\$ 8,800.00
<b>Sewer</b>				
12" main	\$ 16.50	\$ 82.50	80.00	\$ 7,920.00
<b>Utility Relocation Total</b>				<b>\$ 41,899.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	\$ -	\$ -	
<b>ROW Total</b>			<b>\$ -</b>	

## **Neely Road / Lake Kozisek Dam - Order of Magnitude Opinion of Cost**

Kozisek Dam is a Safe Dams Program Category I structure adjacent to and possibly partially within Fayette County Right-of-Way for Neely Road. The project includes evaluation, design, permitting, and construction of necessary improvements and changes to Neely Road to ensure it safely passes design flows and to remove any County liability/ownership that may be associated with Kozisek Dam.

This is an Order of Magnitude Opinion of Cost and based solely on a visual inspection of the dam. No survey measurements, geotechnical evaluations, hydrologic or hydraulic analyses, material testing or other calculations were made in support of the Opinion of Cost other than the assumptions identified below.

A third-party Engineer was hired to develop the Opinion of Cost for the other two Dam projects included in the SPLOST list. The estimate for the Neely Road / Lake Kozisek Dam work was developed by County staff because of the greater uncertainty associated with the scope of this project. Several options are available for bringing this structure into compliance and the County's degree of involvement may change depending upon the final option selected.

The Kozisek Lake Dam is approximately 1,004 feet long, 26 feet in height and has a crest width of 12 feet. The drainage area to the dam is 430 acres (+/-).

## Neely Road / Lake Kozisek Dam - Order of Magnitude Opinion of Cost

Description	Quantity	Units	Unit Price	Cost
<b>Professional Services</b>				
Surveying for Design				\$8,000
Geotechnical Exploration				\$5,000
Design and Preparation of Construction Documents				\$30,000
Preconstruction Notification (PCN) to USACOE				\$3,000
State Waters Buffer Encroachment Variance Application				\$1,000
Construction Administration Services <sup>1</sup>				\$7,000
Geotechnical Construction Monitoring <sup>1</sup>				\$10,000
1. Assumes two month construction monitoring				
<b>Subtotal</b>				<b>\$64,000</b>
<b>Construction Activities</b>				
Mobilization	1	LS	\$10,000	\$10,000
Traffic Control	1	LS	\$7,500	\$7,500
Erosion Control / Pollution Prevention	1	LS	\$8,000	\$8,000
Clearing & Grubbing	0.8	AC	\$5,000	\$4,000
Control of Water	1	LS	\$2,000	\$2,000
Concrete cross-drains under Neely Road	80	LF	\$315	\$25,200
Concrete Headwalls	2	EA	\$2,500	\$5,000
Earthwork	588	CY	\$15	\$8,820
Grassing	3872	SY	\$3	\$9,680
Rip Rap	250	TN	\$80	\$20,000
Paving	830	SY	\$60	\$49,800
<b>Subtotal</b>				<b>\$150,000</b>
General Conditions (7%)				\$10,500
Overhead & Profit (7%)				\$10,500
(Overhead & Profit reduced from 15% since County expected to perform substantial amount of work in right-of-way)				
Contingency (10%)				\$15,000
<b>Subtotal</b>				<b>\$36,000</b>
<b>Total Project Cost</b>				<b>\$250,000</b>

*Assumptions:*

1. Clearing limits based on 60-ft road right-of-way, less existing asphalt.
2. Cross-drain costs based on twin 6' x 6' box culverts. Actual size to be determined.
3. Earthwork assumes average depth of 2 feet, with 4:1 side slopes.
4. "Paving" include demolition, base preparation, GAB, hauling and asphalt placement, etc.

General Information		Map	
Project ID			
Street Name	Lees Mill Rd		
Site Visit Date	1/20/2016		
Road Classification	Rural		
Project Notes			
Culvert replacement alternatives to provide flow capacity for the 100 year storm peak runoff.			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)			
Existing Side Slopes			
Existing Guardrail	No		
Depth fm Pavement to Top of Culvert (ft):	(+/-) 5.2'		
Pipe Type and Size	3 - 72" CMP		
Pipe Condition (1-5) (1 is new)	5		
Condition Notes: Existing culverts do not provide service for the 100 yr storm event.			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands	TBD		
Ditches	YES		
State Waters	YES		
Utilities (Visual Inspection)			
Electric	Aerial		
Cable	Unknown		
Phone	Unknown		
Gas	Underground		
Water	Underground		
Sewer	Underground		
Other			
Proposed Design		Stage Construction Options	
Roadway Section	Typical	Close Location to Traffic	X
Culvert Size & Material	2-8'X7' Concrete Box Culvert with associated wing walls and rip-rap.	Maintain One Lane - No Temp Pavement	
Utility Relocations	16" Waterline	Maintain One Lane - Temp Pavement	
Guardrail Replacement		Stage Construction Notes:	
Miscellaneous Features		Assumed road closure	
Planning Cost Estimate			
Type	Notes	Total	
Design	Actual Cost including Environmental Permitting and Eng of Record Administrative Fee	\$51,470	
Right of Way Cost	Assuming UPS/DWS ends extends past ROW 1/20 acre	\$17,424	
Utility Relocation Cost		\$132,521	
Construction Cost	Includes 1/8 acre clearing and grubbing, guardrail installation	\$310,434	
<b>Total Planning Estimate</b>		<b>\$511,849</b>	



**Photo 1:**



**Photo 2:**

Lees Mill Road

**Photo Date:**

1/05/2016

**Taken By:**

Tony Hicks

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Lees Mill Road

**Photo Date:**

12/24/2015

**Taken By:**

Homeowner

**Page:**

**2**

**Roadway Construction, Utility Relocation and ROW Quantity Calculations**

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1200.00	\$ 6,726.40
Curb and Gutter (LF)	-	\$ 18.42	0.00	\$ -
4" Sidewalk (SY)	-	\$ 36.90	0.00	0
Guardrail (LF)	-	\$ 49.09	110.00	5400.12
End Anchorage (EA)	-	\$ 1,380.00	4.00	5520
Subtotal				\$ 17,646.52
Grading Complete (5% of Rwy Items & Dmg Total \$)				\$ 10,792.91
Roadway Total				\$ 28,439.43

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	554.65	\$ 5,757.30
72" CMP (LF)	\$ 54.00		180.00	\$ 9,720.00
2-8'X7' Box Culvert (CY)		\$ 892.19	154.98	\$ 138,271.61
Box Culvert Wingwalls, Parapetes (CY)		\$ 892.19	20.82	\$ 18,575.40
Steel (lb)		\$ 1.42	15023.40	\$ 21,333.23
Culvert Bedding (CY)		\$ 48.60	32.60	\$ 1,584.36
Trench Backfill (CY)		\$ 2.99	367.73	\$ 1,098.77
Trench Compaction (CY)		\$ 6.36	294.18	\$ 1,870.99
Drainage Total				\$ 198,211.64

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	50	\$ 35.40

<b>Signing and Marking Total</b>			<b>\$ 35.40</b>
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Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.13	\$ 1,282.50
Temporary Pavement		0.00	0
Temporary Drainage (Stream Pump Around)	\$ 30,000.00	1.00	\$ 30,000.00
Staging Total			\$ 31,317.90

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	100.00	\$ 439.20
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	168.00	\$ 711.65
Check Dam Type C Silt Fence (LF)	\$ 6.79	0.00	\$ -
Erosion Control Mats (SY)	\$ 1.87	0.00	\$ -
Landscape Mulch (SY)	\$ 3.58	0.00	\$ -
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	340.00	\$ 20,734.56
Plastic Filter Fabric (SY)	\$ 5.72	340.00	\$ 1,946.16
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -
Ditch Adjustment/Grading (LS)	\$ 5,000.00	1.00	\$ 5,000.00
Erosion Control Total			<b>\$ 28,831.57</b>

<b>Construction Cost Total</b>			<b>\$ 286,835.94</b>
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Traffic Control (8% of Construction Total \$)			<b>\$ 22,946.88</b>
Public Works Costs			651
<b>Construction Cost Grand Total</b>			<b>\$ 310,433.81</b>

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
<b>Electric</b>				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
<b>Phone</b>				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
<b>Cable</b>				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
<b>Gas</b>				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
<b>Water</b>				
Cap and Remove (EA)		\$ 3,045.00	1.00	\$ 3,045.00
16" Watermain (LF)		\$ 203.73	200.00	\$ 40,746.00
16" Gate Valve (EA)		\$ 7,885.00	2.00	\$ 15,770.00
20" Steel Casing (LF)		\$ 162.00	120.00	\$ 19,440.00
16" Jack and Bore (EA)		\$ 396.00	120.00	\$ 47,520.00
16" 45 degree MJ Bend (EA)		\$ 1,500.00	4.00	\$ 6,000.00
<b>Utility Relocation Total</b>				<b>\$ 132,521.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	4356.00	\$ 17,424.00
<b>ROW Total</b>			<b>\$ 17,424.00</b>

TO: Steve Rapson, County Administrator

FROM: Phil Mallon, Public Works

DATE: July 28, 2016

RE: Longview Dam (a.k.a. Margaret Phillips Lake Dam) Update

**Background**

Longview Dam (a.k.a. Margaret Phillips Lake Dam) is classified by the Georgia Safe Dams Program as a Category 1 structure. Under the authority of the Safe Dam Act, the Georgia Safe Dams Program maintains an inventory and classification system of all the dams in the state. They also establish minimum design and maintenance standards for Category I (high hazard) structures through inspection and permitting.

This dam is approximately 16-feet high, 670 feet long, has a top width of 20 feet, and impounds a 16-acre lake. Longview Road runs across the top of the dam. Fayette County owns and operates the dam. In order to meet Georgia Safe Dams Program requirements, Fayette County shall either:

- Upgrade the dam;
- Breach the dam;
- Modify the dam to remove the downstream flood risk; or
- Remove or modify the downstream structures at risk.

Of these four options, upgrading the dam and breaching the dam are the most practical options.

Fayette County authorized Walden, Ashworth & Associates to serve as the “Engineer of Record” for this project to develop upgrade and dam breach options for County review (attached). A summary follows.

**Option I - Dam Upgrade**

Walden reviewed all the Safe Dams Programs files on Longview Dam and performed a field inspection. They did not perform a detailed hydrological and hydraulic evaluation because of cost constraints. The inspection confirmed that significant work is needed to bring this dam up to Category I standards. Noted concerns include: slope stability since the toe of the dam is chronically wet, the presence of longitudinal cracks along the road, and severe erosion around the main drain pipe. Maintenance and repair work includes: removing vegetation, flattening slopes to a 3:1 (or flatter); and installing a seepage collection and removal system.

Based on previous experience and taking into consideration both the drainage basin and lake size, Walden assumed that a 20-foot wide labyrinth weir would be required for outlet control of the improved dam. An outlet structure of this size requires a bridge for the road and underground utilities would have to be relocated.

The Consultant’s order-of-magnitude cost estimate for the Dam Upgrade option is \$1,409,815. This includes design and construction but excludes acquisition costs for approximately 40,000 square feet of new right-of-way and easements.

### ***Option 2 - Dam Breach***

The dam breach option returns the watershed to free-flow (i.e., natural) conditions by draining the lake and cutting out a portion of the dam. The Option also calls for Longview Road to be permanently cut/broken, thereby avoiding the cost of a new culvert or bridge. Instead, cul-de-sacs will be provided on either side of the breach location to provide turn-around points for Longview Road. Work to breach Longview Dam includes:

- Environmental permitting;
- Acquiring proposed right-of-way and easements for the project.
- Draining the lake;
- Breaching the dam with a 20-ft cut and 4:1 side slopes;
- Breaking of Longview Road and installation of two cul-de-sacs;
- Installation of guard rail; and
- Installation of a drain pipe and concrete weir wall for control of peak flows.

Breaching the dam removes the dam from any further operations and maintenance requirements by the Georgia Safe Dams Act. For a conceptual cost estimate, County staff assumed the Dam Breach option would be \$704,907, one-half the estimated amount to upgrade the dam. Similar to Option 1, this excludes right-of-way and easement costs.

### ***Recommendation***

Staff recommends Option 2, Dam Breach. This option provides the double benefit of 1) meeting the required Ga Safe Dams Act Category I standards and 2) removing the structure from future State operation and maintenance requirements. Although Longview Road is a Collector, it lends itself to be changed from a thru road to a dead-end road since there are alternate roads (i.e., SR 314) providing the same connectivity.

Direction is needed from the Board of Commissioners regarding which option to pursue. Further design and permitting is on hold until guidance is provided.

## **COST ESTIMATES FOR LONGVIEW DAM TO MEET GEORGIA SAFE DAMS CATEGORY 1 REQUIREMENTS**

**Option 1 – Dam Upgrade: \$1,409,815**

**Option 2 – Dam Breach (*preferred*): \$704,907**

**ORDER OF MAGNITUDE OPINION OF COST  
FOR THE REHABILITATION  
OF MARGARET PHILLIPS LAKE DAM  
FOR**



**FAYETTE COUNTY BOARD OF COMMISSIONERS**  
**STEVE BROWN, CHAIRMAN**  
**CHARLES ODDO, VICE CHAIRMAN**  
**DAVID BARLOW**  
**RANDY OGNIO**  
**ALLEN McCARTY**



Margaret Phillips Lake Primary Spillway

**August 5, 2013**



**WALDEN, ASHWORTH & ASSOCIATES, INC.**  
Consulting Engineers

**MARGARET PHILLIPS LAKE DAM  
FAYETTE COUNTY, GEORGIA  
ORDER OF MAGNITUDE  
OPINION OF COST**

**WALDEN, ASHWORTH & ASSOCIATES, INC.  
CONSULTING ENGINEERS**

August 5, 2013  
WA&A J.O. 3301700





**WALDEN, ASHWORTH & ASSOCIATES, INC.**

**CONSULTING ENGINEERS**

P.O. BOX 6462 • MARIETTA, GEORGIA 30065 • 770/956-7879

August 5, 2013

Mr. Phil Mallon, P.E.  
Fayette County Engineer  
115 McDonough Rd  
Fayetteville, Georgia 30215

**RE: MARGARET PHILLIPS LAKE DAM  
FAYETTE COUNTY, GEORGIA  
ORDER OF MAGNITUDE - OPINION OF COST  
WA&A J.O. 3301700**

Dear Mr. Mallon:

We have completed our Order of Magnitude Opinion of Cost for the Margaret Phillips Lake Dam and are pleased to present the results in the attached report. We appreciate the opportunity to assist Fayette County on this project.

If you have any questions, please do not hesitate to call.

Very truly yours,

WALDEN, ASHWORTH & ASSOCIATES, INC.

Martin L. Walden, P.E.  
President

MLW/jcw

Attachment



**MARGARET PHILLIPS LAKE DAM  
FAYETTE COUNTY, GEORGIA  
ORDER OF MAGNITUDE COST ESTIMATE**

**INTRODUCTION**

This report, which was authorized through an agreement with the Fayette County Board of Commissioners, provides an Order of Magnitude Opinion of Cost for the rehabilitation of the Margaret Phillips Lake Dam and includes a summary of the assumptions and procedures used to develop that Opinion of Cost.

**SCOPE**

Our Order of Magnitude Opinion of Cost to rehabilitate the Margaret Phillips Lake Dam and bring it into compliance with current requirements for Category I, high hazard dams is based on a brief visual inspection of the dam, a review of available data and our experience with similar dams. The visual inspection was made without the benefit of surveying equipment and no measurements were taken. The scope of the site visit was limited to visible elements only and excluded covered, buried, or hidden conditions. The scope of work did not include any calculations, special investigations, equipment testing, field or laboratory testing, geotechnical investigations or material testing.

**DATA SEARCH - GEORGIA SAFE DAMS PROGRAM FILES**

The purpose of the Georgia Safe Dams Act, 1977, is to protect the health, safety and welfare of all citizens of the state by reducing the risk of dam failure, thus reducing the risk of death and injury. Under the authority of the Safe Dam Act, the Georgia Safe Dams Program maintains an inventory and classification system of all the dams in the state, an inspection and permitting system, and sets certain minimum design standards for those dams that are considered to be Category I (high hazard) structures.

The Safe Dams Program maintains a file of all known data, inspection reports, correspondence and permitted improvements to all Category I dams. Because the Margaret Phillips Dam is classified as a Category I structure, the Safe Dams Program maintains such a file for it. As part of the scope of work, we reviewed the file for the dam at the office of the Safe Dams Program.



### **DESCRIPTION OF DAM**

The Margaret Phillips Lake Dam is an estimated 670 feet long and has a top width of 20 feet. The dam is approximately 16 feet high and impounds a lake having a surface of approximately 16 acres at normal pool with a drainage basin of approximately 860 acres (1.3 sq. mi.). The normal pool elevation of the lake is controlled by a Corrugated Metal Pipe (CMP) riser located near the center of the dam. The secondary spillway consists of two 24 inch diameter reinforced concrete culverts under the road on top of the dam.

### **ASSUMPTIONS USED IN OPINION OF COST**

Our Opinion of Cost assumes that all of the deficiencies noted by the Georgia Safe Dams Program and our brief inspection will be addressed in the renovation of the dam and will include such items as removal of inappropriate vegetation on both the upstream and downstream slopes; flattening of both slopes to a 3:1 slope; installation of a seepage collection and removal system including a full height chimney/blanket drain and toe drain and additional spillway capacity.

It is not possible to determine the adequacy of the capacity of the spillways without a detailed hydrological and hydraulic evaluation. Such an evaluation is beyond the scope of this Order of Magnitude estimate. Therefore, based on the size of the lake and its drainage basin, we have assumed that a 20 foot wide labyrinth weir type structure will be required. It is important to understand that a more detailed engineering evaluation will be required before a more refined opinion of cost can be developed.

The construction of the labyrinth weir spillway will require the excavation of a section completely through the dam. The rectangular concrete spillway structure will be constructed along with the appropriate seepage control drains in this excavated notch in the dam and select fill will be backfilled against the structure. In order to maintain the roadway, a bridge spanning across the spillway structure will be required. The water line will be suspended under the bridge.

Using criteria established by the Georgia Safe Dams Program, the structure will have a design storm of 25% of the Probable Maxim Precipitation (PMP) based on Antecedent Moisture Condition III (AMC III) which reflects a saturated watershed from antecedent rains. This condition results in the highest runoff potential.



## EASEMENTS

The work required to rehabilitate the Margaret Phillips Lake Dam will include construction of a seepage control system and flattening of the downstream slope. To accomplish this work will require construction that will be outside of the right of way and, therefore, on property owned by others. Before this work can be done, property and/or easements must be obtained from the individual property owners affected. It is important to note that the final amount of property owned by others that will be impacted cannot be determined until the final design has been completed. The cost for obtaining this property and/or easements has not been included in the Order of Magnitude Opinion of Cost.

Based on our very preliminary evaluation, the following parcels will be impacted by the areas indicated.

### **PARCELS IMPACTED**

<b>PARCEL NO.</b>	<b>AREA IMPACTED (SQ FT)</b>
0544-037	16,000
0544-121	17,000
0544-0008a	8,700

## APPENDIX

A copy of the letter from the Georgia Safe Dams Program outlining the items they have identified that must be addressed to bring the dam into compliance with Category I standards can be found in the appendix of this report.



**MARGARET PHILLIPS LAKE DAM  
FAYETTE COUNTY, GEORGIA  
ORDER OF MAGNITUDE  
OPINION OF COST**

Our Opinion of Cost is based on limited data and does not have the benefit of detailed design and/or drawings. We have made assumptions based on our observations, available data and our experience with similar dams. A more definitive cost estimate cannot be prepared without detailed design.

The American Association of Cost Engineers recommends dividing engineering construction cost estimates into three basic categories as follows:

**Order of Magnitude Estimate**

This is an estimate made without detailed engineering data. Some examples would be an estimate from cost-capacity curves, an estimate using scale-up or scale-down factors and an approximate ratio estimate.

**Budget Estimate**

Budget in this case applies to the owner's budget and not to the budget as a project control document. A budget estimate is prepared using flow-sheets, layouts and equipment details.

**Definitive Estimate**

As the name implies, this is an estimate prepared from very defined engineering data. As a minimum, the data must include fairly complete plans and elevations, piping and instrumentation diagrams, one-line electrical diagrams, equipment data sheets and quotations, structural sketches, soil data and sketches of major foundations, building sketches and a complete set of specifications. The "maximum" definitive estimate would be made from "Approved for Construction" drawings and specifications.

The construction cost estimate for the rehabilitation of this dam is an Order of Magnitude estimate.



The following is a breakdown of the expected cost for the rehabilitation of the Margaret Phillips Lake Dam. The Opinion of Cost presented here is an Order of Magnitude estimate based on a Category I classification of the dam by the Georgia Department of Natural Resources, Safe Dams Program. On the following page is a breakdown of the Order of Magnitude Opinion of Construction Cost.

**PROFESSIONAL SERVICES**

Surveying for Design	\$ 9,000
Geotechnical Exploration	\$ 20,000
Design and Preparation of Construction Documents	\$ 45,000
Preconstruction Notification (PCN) to USACOE	\$ 3,000
State Waters Buffer Encroachment Variance Application	\$ 1,000
*Construction Administration Services	\$ 15,000
*Geotechnical Construction Monitoring	\$ 100,000

\* Assumes 3 month construction monitoring

**CONSTRUCTION**

Opinion of Construction Cost	<u>\$ 1,216,815</u>
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**TOTAL REHABILITATION COST** **\$ 1,409,815**

Total Rehabilitation Cost does not include any cost for land or easement acquisition that may be required.

**WALDEN, ASHWORTH & ASSOCIATES, INC.**  
CONSULTING ENGINEERS



**MARGARET PHILLIPS LAKE DAM  
ORDER OF MAGNITUDE  
OPINION OF CONSTRUCTION COST**

Description	Quantity	Units	Unit Price	Cost
Mobilization	1	LS	\$25,000.00	\$25,000
Erosion Control	1	LS	\$20,000.00	\$20,000
Clearing & Grubbing	1.5	AC	\$5,000.00	\$7,500
Control of Water	1	LS	\$30,000.00	\$30,000
Under Drain Sand	25	TN	\$50.00	\$1,250
Under Drain # 89 Stone	20	TN	\$39.50	\$790
Under Drain # 57 Stone	50	TN	\$39.50	\$1,975
Under Drain Pipe	385	LF	\$20.00	\$7,700
Concrete	400	CY	\$1,000.00	\$400,000
Earthwork	5,000	CY	\$15.00	\$75,000
Grassing	5,725	SY	\$2.50	\$14,313
Rip Rap	1,220	TN	\$80.00	\$97,600
Blanket / Chimney Drain	770	TN	\$50.00	\$38,500
Toe Drain	500	LF	\$80.00	\$40,000
Toe Drain Outlets / Clean Outs	2	EA	\$2,500.00	\$5,000
Water Line	100	LF	\$30.00	\$3,000
Paving	320	SY	\$60.00	\$19,200
Bridge	675	SF	\$200.00	\$135,000
<b>SUBTOTAL</b>				<b>\$921,828</b>
GENERAL CONDITIONS (7%)				\$64,531
OVERHEAD & PROFIT (15%)				\$138,274
CONTINGENCY (10%)				\$92,183
<b>SUBTOTAL</b>				<b>\$294,988</b>
<b>Total Estimated Construction Cost Budget</b>				<b>\$1,216,815</b>

The American Association of Cost Engineers recommends dividing engineering construction cost estimates into three basic categories: Order-of-Magnitude, Budget and Definitive Estimates. The Order of Magnitude Estimate is defined as follows:

This is an Estimate is made without detailed engineering data. Some examples would be an estimate from cost-capacity curves, an estimate using scale-up or scale-down factors and an approximate ratio estimate.



## APPENDIX

**Georgia Department of Natural Resources**

**Environmental Protection Division**

Safe Dams Program

4244 International Parkway, Suite 110

Atlanta, Georgia 30354

Linda MacGregor, P.E., Branch Chief

(404) 362-2678

November 5, 2012

**FILE COPY**

The Honorable Herb Frady, Chairman  
Fayette County Board of Commissioners  
140 Stonewall Avenue West  
Suite 100  
Fayetteville, Georgia 30214

**SUBJECT:** Margaret Phillips Lake Dam  
Fayette County

Dear Chairman Frady:

As we previously informed Fayette County by letter dated May 13, 2009, the subject dam has been determined to be within the jurisdiction of the 1978 Georgia Safe Dams Act (Act) by virtue of its hazard classification. A detailed visual inspection of the dam, as is also provided for by the Act, has now been performed by the Environmental Protection Division (Division). Copies of the Visual Inspection Report are enclosed. The inspection revealed that the dam does not comply with certain paragraphs of the Rules for Dam Safety (Rules), specifically the following items from Section 391-3-8-.09:

1. Paragraph (3)(a) Stability – “The design and/or evaluation of new and existing dams shall conform to accepted practices of engineering profession and dam safety industry.” Based on standard engineering practice, the downstream slope of the dam is steep and the toe of the dam is wet, which may affect the stability of the dam. There are longitudinal cracks along the road on the crest of the dam with slight displacement towards the downstream edge of the pavement. This may be a stability concern and needs investigation.
2. Paragraph (3) (d) – The dam shall have a means of draining the reservoir to a safe level. It is unknown whether there is a low-level outlet and if it is functional.
3. Paragraph (3) (e) – “All earthen embankments shall be protected from surface erosion by appropriate vegetation, or some other type of protective surface such as riprap, and shall be maintained in a safe condition.” The slopes of the dam have trees/brush that need to be removed and replaced with a low growing grass. There is severe erosion in the plunge pool where the principal spillway pipe outlets. There needs to be erosion protection around the plunge pool area and along the waterline.
4. Paragraph (3) (f) – “Each dam shall be capable of safely passing the fraction of flood developed from the PMP hydrograph depending on the sub classification of the dam.” The spillway system has to be evaluated for adequacy of the system to be able to pass the required storm event.
5. Paragraph (3) (g) – There is seepage/wet area at the toe of the dam that needs further investigation.
6. Paragraph (3) (j) – “appropriate freeboard for wave action shall be considered...” The spillway system needs to be evaluated for compliance with this standard.
7. Paragraph (4) – “Other design standards may be imposed as deemed appropriate...” The condition of the CMP through the dam is unknown and should be taken out of service.

The Rules require that you, an owner/operator of the dam, retain an experienced professional engineer recognized as an "Engineer of Record" to assist you with bringing the dam into compliance with the Act. Approved Engineer of Record lists are enclosed for your information. The dam may be brought into compliance by either addressing the noted deficiencies or by addressing the downstream hazard potential. The options are as follows:

- **Upgrade the dam:** Your Engineer of Record must perform a detailed investigation of the noted deficiencies and design remedial measures as necessary. After review and approval of the detailed investigation report, construction plans and specifications, and the schedule for any necessary improvements, we will recommend that the Director of the Division (Director) issue a Construction and Operation Permit for the dam. Once the remedial measures have been implemented, the dam will remain a permitted Category I structure and will be inspected on a regular basis to ensure that it is being maintained properly and remains in compliance. You will be required to perform your own routine inspections, maintain the dam and address any future deficiencies if they arise.
- **Breach the dam:** You will be required to fill out a breach application, and your Engineer of Record will be required to submit design plans for safely breaching the dam, such that it can no longer retain water. Once the breach plans have been approved and the dam has been breached, you will have no further responsibilities related to the Act and Rules.
- **Modify the dam to remove the downstream flood risk:** Your Engineer of Record must perform an extended dam failure flood study to identify all potential structures at risk downstream, such as homes, businesses, churches, etc., and submit design plans for the necessary modifications to the dam that would prevent flooding at these structures in the event of a dam failure. It should be noted that for classification purposes the Division typically only identifies one structure at risk. There may be additional structures in the dam failure flood zone. Once the flood study and design plans have been approved and the modifications implemented, the dam may be reclassified either Category II (low hazard) or exempt at the Director's discretion. A permit from the Division will no longer be required for operation of the dam. The classification may change if future development occurs in the dam failure flood zone.
- **Remove or modify the downstream structure(s) at risk:** Your Engineer of Record must perform an extended dam failure flood study to identify all potential structures at risk. All identified structures will have to be permanently removed from the dam failure flood zone or in some cases may be flood-proofed (design plans for flood-proofing will have to be reviewed and approved). Once the structures have been removed or adequately flood-proofed, the dam may be reclassified Category II at the Director's discretion, and a permit from the Division will no longer be required for operation of the dam. You should be aware that the classification may change if future development occurs in the dam failure flood zone.

Your engineer should be able to provide you with the feasibility of each option. All options require that your engineer inspect any necessary work as it is being performed. After the work is completed, your engineer must certify in writing that the work was performed in accordance with any approved plans and specifications. It is important that you do not attempt to modify the dam yourself. Often an improper repair attempt can do more harm than good, and the law requires that modifications to Category I dams be developed by an engineer and receive prior approval from the Division.

Please inform the Division's Safe Dams Program in writing at 4244 International Parkway, Suite 110, Atlanta, Georgia, 30354 before **January 15, 2013** with the name of the engineer you have retained to assist you with bringing the dam into compliance. It would be our recommendation that partial owners of the same dam work together to retain a common engineer. An engineering report must be submitted no later than **April 15, 2013**.

The files of all dams, which are regulated by the Division, are public information. Representatives of engineering firms interested in remedial dam design work may see a copy of this letter in our files and contact you offering a proposal for the design work. The Division does not recommend any engineering firm to a dam owner. We suggest that you solicit proposals from several firms (a minimum of three) and then compare the experience and prices in making your selection.

If you have any questions about the contents of the enclosed report or your responsibilities with regard to the Act and Rules, please contact the Safe Dams Program at 404/362-2678, or write us and we will be glad to address your questions.

Sincerely,



Dallon Thomas Woosley, P.E.  
Program Manager  
Safe Dams Program

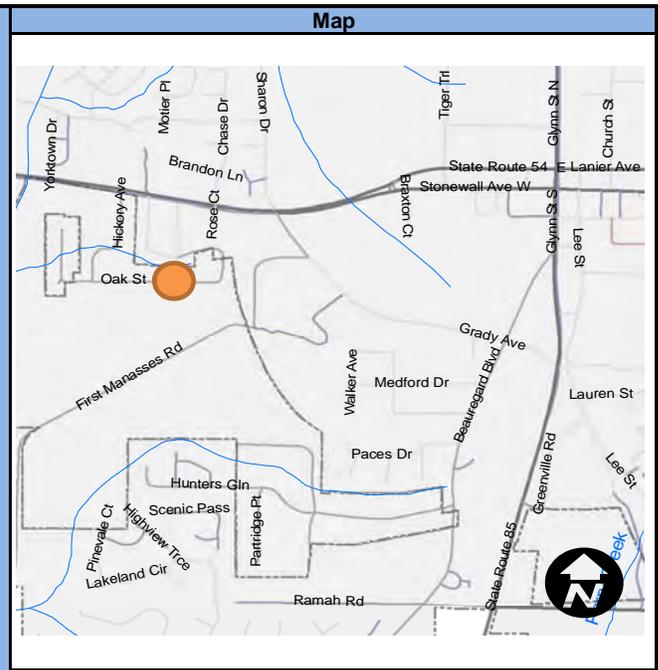
DTW:ks

Enclosures

cc: Thomas Concrete of Georgia, Inc.



General Information	
<b>Project ID</b>	
<b>Street Name</b>	<b>330 Oak Street</b>
<b>Site Visit Date</b>	5/21/13
<b>Road Classification</b>	Internal Local
Project Notes	
Rural Typical Section	
Field Notes	
Design (Existing Site Features)	
<b>Existing Road Laneage</b>	2
<b>Existing Shld Width (paved and grass) (feet)</b>	1 - 2' Grass
<b>Existing Side Slopes</b>	2:1
<b>Existing Guardrail</b>	None
<b>Depth fm Pavement to Top of Culvert (ft):</b>	5'
<b>Pipe Type and Size</b>	15" RCP
<b>Pipe Condition (1-5) (1 is new)</b>	5 (Installation)
Condition Notes:	
<b>Pavement Type/Condition</b>	Asphalt/Good
Environmental Features	
<b>Wetlands</b>	None
<b>Ditches</b>	Along South Side
Utilities (Visual Inspection)	
<b>Electric</b>	Aerial
<b>Cable</b>	Aerial
<b>Phone</b>	Aerial
<b>Gas</b>	
<b>Water</b>	Buried
<b>Sewer</b>	
<b>Other</b>	



Stage Construction Options	
<b>Close Location to Traffic</b>	X
<b>Maintain One Lane - No Temp Pavement</b>	
<b>Maintain One Lane - Temp Pavement</b>	
Stage Construction Notes:	

Proposed Design	
<b>Roadway Section</b>	
<b>Culvert Size &amp; Material</b>	3' x 2' box, concrete, 80' length
<b>Utility Relocations</b>	Water
<b>Guardrail Replacement</b>	
<b>Miscellaneous Features</b>	~ 200' drainage ditch or additional piping needs to be installed for downstream property. Receiving stream could use ~500' of stream restoration

Planning Cost Estimate		
Type	Notes	Total
<b>Design</b>		\$15,000
<b>Right of Way Cost</b>		\$4,000
<b>Utility Relocation Cost</b>		\$5,500
<b>Construction Cost</b>		\$44,006
<b>Environmental Permits</b>		\$10,000

<b>Total Planning Estimate</b>	<b>\$78,506</b>
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**Photo 1:**



**Photo 2:**

Oak Street

**Photo Date:**

5/21/2013

**Taken By:**

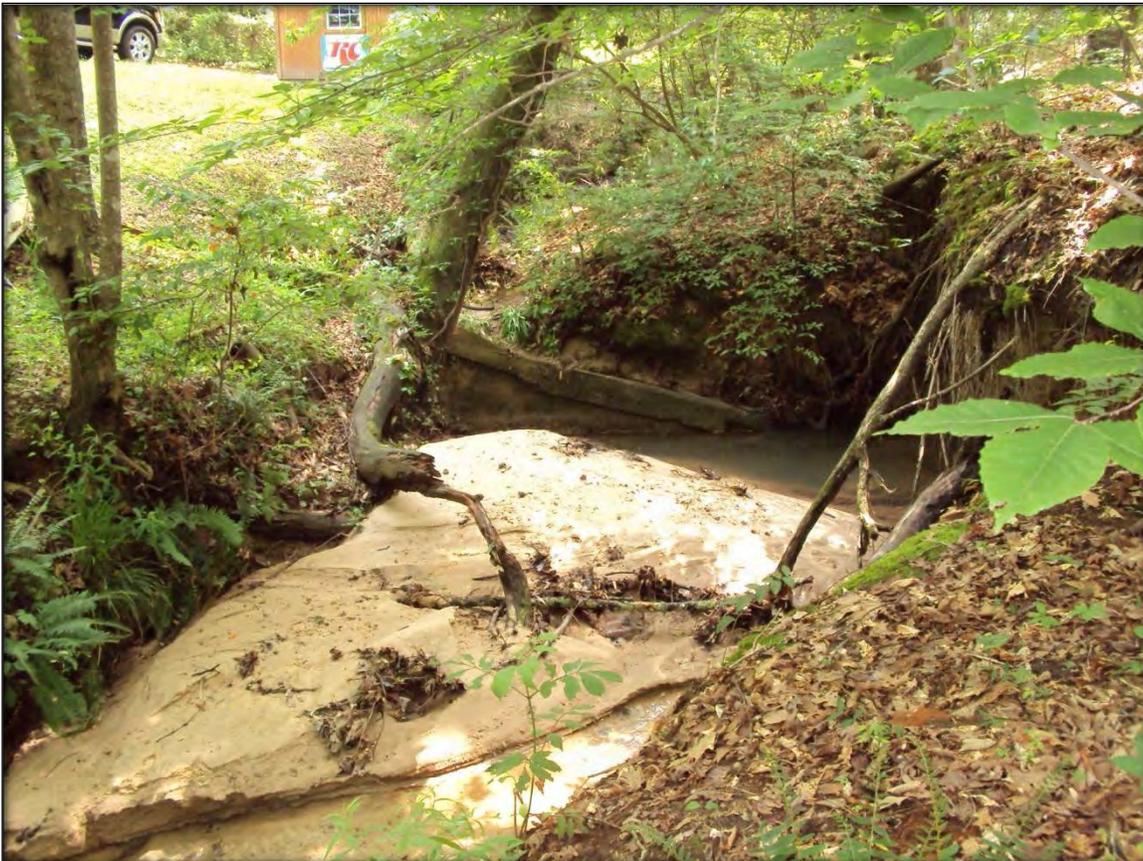
David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Oak Street

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

**Roadway Construction, Utility Relocation and ROW Quantity Calculations**

Roadway Construction	Installation Unit Cost	Amount	Total Cost
Pavement			\$ 3,618.39
Curb and Gutter (LF)	\$ 27.50		
4" Sidewalk (SY)	\$ 49.50		
Guardrail (LF)	\$ 57.20		
End Anchorage (EA)	\$ 2,530.00		
Subtotal			\$ 3,618.39
Grading Complete (5% of Rwy Items & Drng Total \$)			\$ 1,317.52
<b>Roadway Total</b>			<b>\$ 4,935.91</b>

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Class A Conc (cy)		\$ 698.50	26	\$ 18,293.72
Steel (lb)		\$ 1.38	2559	\$ 3,518.63
Type 2 Back Fill (cy)		\$ 60.50	15.2	\$ 919.60
<b>Drainage Total</b>				<b>\$ 22,731.94</b>

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (mile)			\$ -
<b>Signing and Marking Total</b>			<b>\$ -</b>

Staging	Installation Unit Cost	Amount	Total Cost
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 10,000.00	1	\$ 10,000.00
<b>Staging Total</b>			<b>\$ 10,000.00</b>

Erosion Control	Installation Unit Cost	Amount	Total Cost
Temporary Grassing (AC)	\$ 418.00	0.1	\$ 41.80
Silt Fence (LF)	\$ 5.50	200	\$ 1,100.00
Check Dam Type C Silt Fence (LF)	\$ 4.40	100	\$ 440.00
Erosion Control Mats (SY)	\$ 2.75	150	\$ 412.50
Mulch (TN)	\$ 286.00	1.4	\$ 400.40
Perm Grassing (ac)	\$ 9.90	0.1	\$ 0.99
Rip Rap (SY)	\$ 66.00	20	\$ 1,320.00
Plastic Filter Fabric (SY)	\$ 6.60	20	\$ 132.00
4" Ditch Paving (SY)	\$ 33.00	0	\$ -
<b>Erosion Control Total</b>			<b>\$ 3,847.69</b>

**Construction Cost Total \$ 41,515.54**

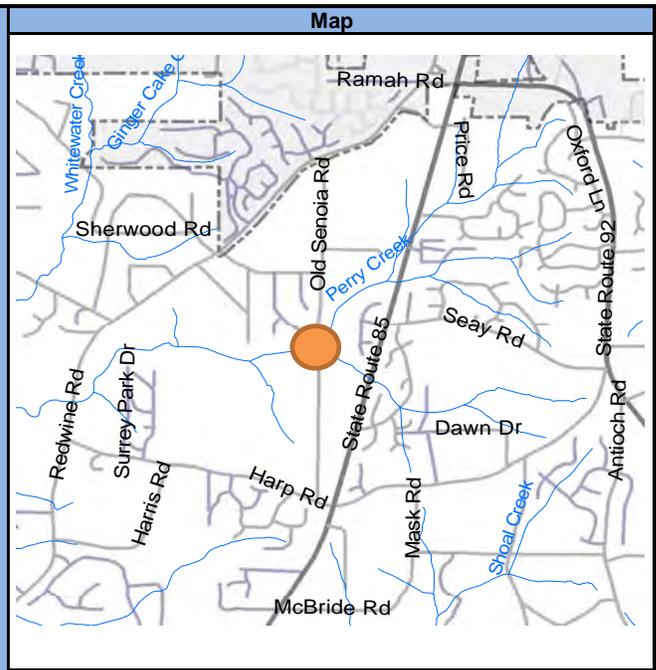
**Traffic Control (6% of Construction Total \$) \$ 2,490.93**

**Construction Cost Grand Total \$ 44,006.47**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
<b>Electric</b>				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	0	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Phone</b>				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	0	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Cable</b>				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	0	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Gas</b>				
4" main	\$ 16.50	\$ 66.00		\$ -
<b>Water</b>				
8" main	\$ 16.50	\$ 93.50	50	\$ 5,500.00
<b>Sewer</b>				
12" main	\$ 16.50	\$ 82.50	0	\$ -
<b>Utility Relocation Total</b>				<b>\$ 5,500.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 2.00	2000	\$ 4,000.00
<b>ROW Total</b>			<b>\$ 4,000.00</b>

General Information	
<b>Project ID</b>	
<b>Street Name</b>	<b>Old Senoia Road</b>
<b>Site Visit Date</b>	5/21/13
<b>Road Classification</b>	Collector
Project Notes	
Rural Typical Section	
Field Notes	
Design (Existing Site Features)	
<b>Existing Road Laneage</b>	2 - 12'
<b>Existing Shld Width (paved and grass) (feet)</b>	8' (G)
<b>Existing Side Slopes</b>	2:1 to 10:1
<b>Existing Guardrail</b>	None
<b>Depth fm Pavement to Top of Culvert (ft):</b>	3'
<b>Pipe Type and Size</b>	3 - 96" CMP
<b>Pipe Condition (1-5) (1 is new)</b>	3
Condition Notes: Lining deteriorated, but pipes fully functioning; DS drop	
<b>Pavement Type/Condition</b>	Asphalt/New
Environmental Features	
<b>Wetlands</b>	None identified
<b>Ditches</b>	None
Utilities (Visual Inspection)	
<b>Electric</b>	Aerial
<b>Cable</b>	
<b>Phone</b>	Aerial and Buried
<b>Gas</b>	
<b>Water</b>	Buried
<b>Sewer</b>	
<b>Other</b>	



Stage Construction Options	
<b>Close Location to Traffic</b>	X
<b>Maintain One Lane - No Temp Pavement</b>	
<b>Maintain One Lane - Temp Pavement</b>	
Stage Construction Notes: Close Road - access from the South & North	

Proposed Design	
<b>Roadway Section</b>	
<b>Proposed Design</b>	100' prestressed concrete beam bridge, three spans, 43' wide
<b>Utility Relocations</b>	Buried Phone, Watermain
<b>Guardrail Replacement</b>	Proposed Guardrail Installation due to proposed culvert(s) and side slopes
<b>Miscellaneous Features</b>	Zone AE with Floodway, Floodplain Analysis Required

Planning Cost Estimate		
Type	Description	Total
<b>Design</b>	bridge design and geotech (BFI) included	\$140,949.73
<b>Right of Way Cost</b>		\$12,000.00
<b>Utility Relocation Cost</b>		\$26,125.00
<b>Construction Cost</b>		\$459,497.27
<b>Environmental Permits</b>	environmental(bridge), floodplain analysis	\$30,000.00

<b>Total Planning Estimate</b>	<b>\$668,572.00</b>
--------------------------------	---------------------





**Photo 1:**



**Photo 2:**

Old Senoia Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1 of 2**



**Photo 1**



**Photo 2**

**Old Senoia Road**

**Photo Date:**

12/28/2015

**Taken By:**

Public Works

**Page**

2 of 2

**Roadway Construction, Utility Relocation and ROW Quantity Calculations**

Roadway Construction	Installation Unit Cost	Amount	Total Cost
Pavement			\$ 6,522.69
Curb and Gutter (LF)	\$ 27.50		\$ -
4" Sidewalk (SY)	\$ 49.50		\$ -
Guardrail (LF)	\$ 57.20	650	\$ 37,180.00
End Anchorage (EA)	\$ 2,530.00	2	\$ 5,060.00
Subtotal			\$ 48,762.69

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 22,863.13

**Roadway Total \$ 71,625.83**

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Class A Conc (cy)		\$ 698.50	0	\$ -
Steel (lb)		\$ 1.38	0	\$ -
Type 2 Back Fill (cy)		\$ 60.50	0	\$ -

Bridge Cost (total) \$ 408,500.00

**Drainage Total \$ 408,500.00**

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping			\$ 500.00

**Signing and Marking Total \$ 500.00**

Staging	Aerial	Installation Unit Cost	Amount	Total Cost
Temporary Pavement				\$0
Temporary Drainage (Stream Diversi Aerial and Buried		\$ 10,000.00	1	\$ 10,000.00

**Staging Total Buried \$10,000**

Erosion Control	Installation Unit Cost	Amount	Total Cost
Temporary Grassing (AC)	\$ 418.00	0.15	\$ 62.70
Silt Fence (LF) 100' prestressed cor	\$ 5.50	250	\$ 1,375.00
Check Dam Type C Silt Fence (LF)	\$ 4.40	200	\$ 880.00
Erosion Control Mats (SY)	\$ 2.75	225	\$ 618.75
Mulch (TN)	\$ 286.00	1.5	\$ 429.00
Perm Grassing (ac)	\$ 9.90	0.1	\$ 0.99
Rip Rap (SY)	\$ 66.00	50	\$ 3,300.00
Plastic Filter Fabric (SY)	\$ 6.60	50	\$ 330.00
4" Ditch Paving (SY)	\$ 33.00		\$ -

**Erosion Control Total \$ 6,996.44**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
<b>Electric</b>				
Aerial	\$ 11.00	\$ 55.00	100	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	0	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	2	\$ 1,375.00
<b>Phone</b>				
Aerial	\$ 11.00	\$ 27.50	0	\$ -
Buried	\$ 16.50	\$ 55.00	100	\$ 7,150.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Cable</b>				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	0	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Gas</b>				
4" main	\$ 16.50	\$ 66.00		\$ -
<b>Water</b>				
8" main	\$ 16.50	\$ 93.50	100	\$ 11,000.00
<b>Sewer</b>				
12" main	\$ 16.50	\$ 82.50	0	\$ -

**Utility Relocation Total \$ 26,125.00**

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 2.00	6000	\$ 12,000.00

**Construction Cost Total \$ 497,622.27**

**Traffic Control (6% of Construction Total \$) \$ 29,857.34**

**Construction Cost Grand Total \$ 527,479.61**

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>Rising Star Rd</b>		
<b>Site Visit Date</b>			
<b>Road Classification</b>	Rural		
<b>Project Notes</b>			
Culvert replacement alternatives to provide flow capacity for the 100 year storm peak runoff.			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-12'		
<b>Existing Shld Width (paved and grass) (feet)</b>			
<b>Existing Side Slopes</b>			
<b>Existing Guardrail</b>	No		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	(+/-) 3.5'		
<b>Pipe Type and Size</b>	2- 72" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3-4		
Condition Notes: Two 72" culverts – left one collapsed, right one has approx. 6" dip in last joint.			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>		<b>Stage Construction Options</b>	
<b>Wetlands</b>	TBD	<b>Close Location to Traffic</b>	X
<b>Ditches</b>	YES	<b>Maintain One Lane - No Temp Pavement</b>	
<b>State Waters</b>	YES (ASSUMED)	<b>Maintain One Lane - Temp Pavement</b>	
		Stage Construction Notes:	
		Assumed road closure	
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Aerial		
<b>Cable</b>	Unknown		
<b>Phone</b>	Unknown		
<b>Gas</b>	Unknown		
<b>Water</b>	Underground		
<b>Sewer</b>	Underground		
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>	Typical		
<b>Culvert Size &amp; Material</b>	2 - 84" round RCP with end treatment		
<b>Utility Relocations</b>	To be verify, (20" DIP or PVC mains)		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Actual Cost including Environmental Permitting and Engineer of Record Administrative Fee	\$54,005	
<b>Right of Way Cost</b>	Assuming UPS/DWS ends extends past ROW 1/20 acre	\$17,424	
<b>Utility Relocation Cost</b>	Assuming no relocation	\$212,535	
<b>Construction Cost</b>	Includes 1/8 acre clearing and grubbing	\$165,180	
<b>Total Planning Estimate</b>		<b>\$449,143</b>	



**Photo 1:**



**Photo 2:**

**Rising Star Road**

**Photo Date:**

4/14/2016

**Taken By:**

Tony Hicks

**Page:**

**1**

**2-84" Culvert Construction and ROW Quantity Calculations**

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1200.00 \$	6,726.40
Curb and Gutter (LF)	\$ -	\$ 18.42	0.00 \$	-
4" Sidewalk (SY)	\$ -	\$ 36.90	0.00	0
Guardrail (LF)	\$ -	\$ 49.09	0.00	0
End Anchorage (EA)		\$ 1,380.00	0.00	0
Subtotal			\$	6,726.40
Grading Complete (5% of Rwy Items & Drng Total \$)			\$	5,352.94
Roadway Total			\$	12,079.34

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	523.72 \$	5,436.20
72" CMP (LF)	\$ 54.00		116.00 \$	6,264.00
84" RCP (LF)		\$ 350.00	116.00 \$	40,600.00
Class A Conc (CY)		\$ 892.19	48.37 \$	43,155.13
Steel (lb)		\$ 1.42	0.00 \$	-
Pipe Bedding (CY)		\$ 48.60	49.41 \$	2,401.20
Trench Backfill (CY)		\$ 2.99	306.57 \$	916.02
Trench Compaction (CY)		\$ 6.36	245.25 \$	1,559.81
Drainage Total			\$	100,332.36

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	50 \$	35.40
Signing and Marking Total		\$	35.40

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.13 \$	1,282.50
Temporary Pavement		0.00	0
Temporary Drainage (Stream Pump Around)	\$ 30,000.00	1.00 \$	30,000.00
Staging Total		\$	31,317.90

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	188.89 \$	829.60
Temporary Grassing (AC)	\$ 855.60	0.00 \$	-
Type C Silt Fence (LF)	\$ 4.24	232.00 \$	982.75
Check Dam Type C Silt Fence (LF)	\$ 6.79	0.00 \$	-
Erosion Control Mats (SY)	\$ 1.87	0.00 \$	-
Landscape Mulch (SY)	\$ 3.58	0.00 \$	-
Perm Grassing (AC)	\$ 1,402.20	0.00 \$	-
Rip Rap Type 3 12" (SY)	\$ 60.98	66.67 \$	4,065.60
Plastic Filter Fabric (SY)	\$ 5.72	66.67 \$	381.60
4" Ditch Paving (SY)	\$ 54.65	0.00 \$	-

<b>Erosion Control Total</b>		\$	<b>6,259.55</b>
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<b>Construction Cost Total</b>		\$	<b>150,024.55</b>
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<b>Traffic Control (8% of Construction Total \$)</b>		\$	<b>12,001.96</b>
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<b>Construction Cost Grand Total</b>		\$	<b>162,026.52</b>
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Public Works 3,153

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
<b>Electric</b>				
Aerial	\$ 11.00	\$ 55.00	0.00 \$	-
Buried	\$ 16.50	\$ 82.50	0.00 \$	-
Wooden Pole	\$ 82.50	\$ 605.00	0.00 \$	-
<b>Phone</b>				
Aerial	\$ 11.00	\$ 27.50	0.00 \$	-
Buried	\$ 16.50	\$ 55.00	0.00 \$	-
Wooden Pole	\$ 82.50	\$ 605.00	0.00 \$	-
<b>Cable</b>				
Aerial	\$ 11.00	\$ 27.50	0.00 \$	-
Buried	\$ 16.50	\$ 55.00	0.00 \$	-
Wooden Pole	\$ 82.50	\$ 605.00	0.00 \$	-
<b>Gas</b>				
4" main	\$ 16.50	\$ 66.00	0.00 \$	-
<b>Water</b>				
Cap and Remove (EA)		\$ 3,780.00	1.00 \$	3,780.00
24" Watermain (LF)		\$ 296.00	150.00 \$	44,400.00
24" Gate Valve (EA)		\$ 15,120.00	2.00 \$	30,240.00
36" Steel Casing (LF)		\$ 185.00	100.00 \$	18,500.00
36" Jack and Bore (LF)		\$ 396.00	100.00 \$	39,600.00
24" 45 degree MJ Bend (EA)		\$ 2,779.00	4.00 \$	11,116.00
10" Watermain (EA)		\$ 53.00	150.00 \$	7,950.00
10" Gate Valve (EA)		\$ 2,430.79	2.00 \$	4,861.58
10" Steel Casing (LF)		\$ 97.83	100.00 \$	9,783.00
10" Jack and Bore (LF)		\$ 396.00	100.00 \$	39,600.00
10" 45 degree MJ Bend (EA)		\$ 676.00	4.00 \$	2,704.00
<b>Utility Relocation Total</b>			\$	<b>212,534.58</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	4,356.00	\$ 17,424.00
<b>ROW Total</b>			<b>\$ 17,424.00</b>



# 228 Bernhard Rd



Pre-construction Photo



Construction Photo



Post Construction Photo



Date Updated:	7/12/2016
Cost Estimate:	\$5,520.98
Est. Project Length:	1 Week
Construction:	Complete
Property Access:	
Utilities:	
Preliminary Eng:	
Right Of Way:	
Construction:	Complete
Contractor:	McCoy Grading
Const Start Date:	3/7/2016
Completion Date:	3/14/2016
Problem:	Washout around an undersized 36 in. diameter corrugated metal pipe inlet caused shoulder and pipe failure.
Proposed Solution:	Replace the current pipe with a 42 in. reinforced concrete pipe and headwalls.
Percent Complete:	100
Current Status:	Complete
Total Cost:	\$46,257



# Brittany Way



Pre-construction Photo



Construction Photo



Post Construction Photo



Date Updated:	7/13/2016
Cost Estimate:	\$75,000.00
Est. Project Length:	3 Weeks
Construction:	In-House
Property Access:	Complete
Utilities:	Complete
Preliminary Eng:	Complete
Right Of Way:	
Construction:	In-House
Contractor:	Fayette County
Const Start Date:	5/27/2014
Completion Date:	9/14/2014
Problem:	Road floods during the 2-year storm event.
Proposed Solution:	Install a 3'x6' concrete box culvert 60' long under Brittany Way.
Percent Complete:	100
Current Status:	Complete
Total Cost:	\$67,432



# 105 Canterbury Ln



## Pre-construction Photo

<b>Date Updated:</b>	7/11/2016
<b>Cost Estimate:</b>	\$24,671.06
<b>Est. Project Length:</b>	1 Week
<b>Construction:</b>	Complete
<b>Property Access:</b>	
<b>Utilities:</b>	
<b>Preliminary Eng:</b>	
<b>Right Of Way:</b>	
<b>Construction:</b>	Complete
<b>Contractor:</b>	Brent Scarbrough and Company
<b>Const Start Date:</b>	12/24/2015
<b>Completion Date:</b>	12/31/2015
<b>Problem:</b>	On 12/24/15, approximately 60 homes within the Chanticleer Subdivision were without water and had no access to and from their homes when a 72-inch diameter corrugated metal pipe failed, collapsing the road.
<b>Proposed Solution:</b>	1 - 72-inch RCP pipe with headwall
<b>Percent Complete:</b>	100
<b>Current Status:</b>	Completed
<b>Total Cost:</b>	\$101, 636

## Construction Photo



## Post Construction Photo





# 110 Lawson Ln



Pre-construction Photo



Construction Photo



Post Construction Photo



<b>Date Updated:</b>	7/12/2016
<b>Cost Estimate:</b>	\$65,000.00
<b>Est. Project Length:</b>	3 Weeks
<b>Construction:</b>	Complete
<b>Property Access:</b>	Complete
<b>Utilities:</b>	Complete
<b>Preliminary Eng:</b>	Complete
<b>Right Of Way:</b>	
<b>Construction:</b>	Complete
<b>Contractor:</b>	Fayette County
<b>Const Start Date:</b>	7/1/2015
<b>Completion Date:</b>	8/15/2015
<b>Problem:</b>	Undersized pipes in Northridge Subdivision results in flooding of road, lots and several homes along Lawson Lane. Project would replace existing pipe and add additional drainage structures.
<b>Proposed Solution:</b>	Replace existing pipe and add additional drainage structures.
<b>Percent Complete:</b>	100
<b>Current Status:</b>	Completed
<b>Total Cost:</b>	\$94,509



# 144 Lowery Rd

Pre-construction Photo



Construction Photo



Post Construction Photo



<b>Date Updated:</b>	7/11/2016
<b>Cost Estimate:</b>	\$23,543.16
<b>Est. Project Length:</b>	1 Week
<b>Construction:</b>	Complete
<b>Property Access:</b>	Complete
<b>Utilities:</b>	Complete
<b>Preliminary Eng:</b>	Complete
<b>Right Of Way:</b>	
<b>Construction:</b>	Complete
<b>Contractor:</b>	McCoy Grading
<b>Const Start Date:</b>	3/12/2016
<b>Completion Date:</b>	3/18/2016
<b>Problem:</b>	Washout around the 54 in. diameter corrugated metal pipe caused shoulder and pipe failure.
<b>Proposed Solution:</b>	Replaced the current pipe with a 60 in. reinforced concrete pipe and headwalls.
<b>Percent Complete:</b>	100
<b>Current Status:</b>	Complete
<b>Total Cost:</b>	\$44,523



# 456 McBride Rd



Pre-construction Photo



Construction Photo



Post Construction Photo



<b>Date Updated:</b>	7/12/2016
<b>Cost Estimate:</b>	\$6,127.50
<b>Est. Project Length:</b>	1 week
<b>Construction:</b>	Complete
<b>Property Access:</b>	
<b>Utilities:</b>	
<b>Preliminary Eng:</b>	
<b>Right Of Way:</b>	
<b>Construction:</b>	Complete
<b>Contractor:</b>	McCoy Grading
<b>Const Start Date:</b>	3/1/2016
<b>Completion Date:</b>	3/4/2016
<b>Problem:</b>	Washout around the 54 in. diameter corrugated metal pipe caused complete road failure.
<b>Proposed Solution:</b>	Install a 54 in. reinforced concrete pipe and headwalls.
<b>Percent Complete:</b>	100
<b>Current Status:</b>	Completed
<b>Total Cost:</b>	\$41,820



# 155 Westbridge Cir



Pre-construction Photo



Construction Photo



Post Construction Photo



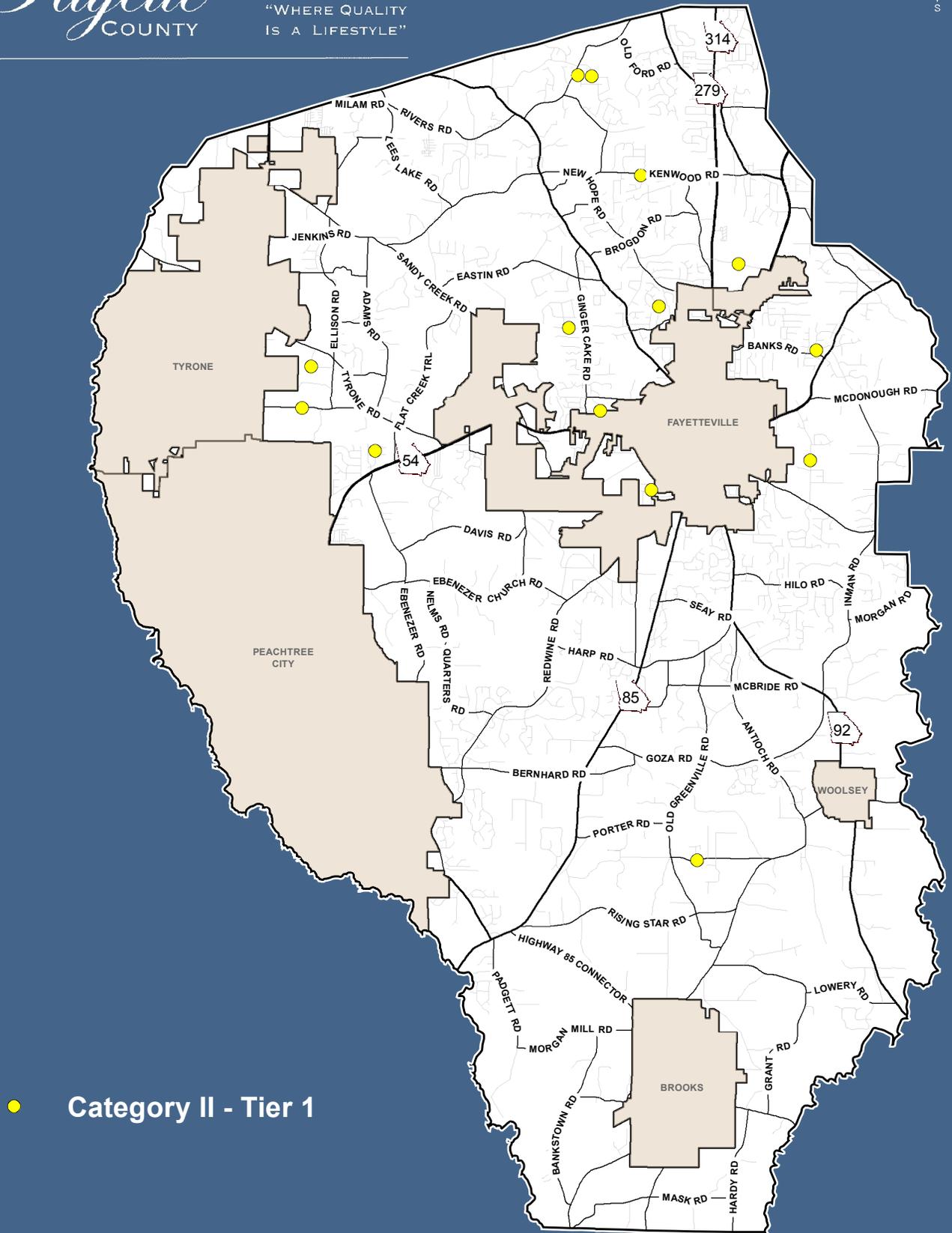
Date Updated:	7/13/2016
Cost Estimate:	\$3,846.48
Est. Project Length:	1 week
Construction:	Complete
Property Access:	
Utilities:	
Preliminary Eng:	
Right Of Way:	
Construction:	Complete
Contractor:	Brent Scarbrough and Company
Const Start Date:	1/12/2016
Completion Date:	1/14/2016
Problem:	During the 2015 Christmas and New Years flooding events two-36 in. diameter corrugated metal pipes failed causing imminent road failure.
Proposed Solution:	Replace with two-36 in. diameter reinforced concrete pipes and headwalls.
Percent Complete:	100
Current Status:	Completed
Total Cost:	\$68,419





Fayette  
COUNTY

"WHERE QUALITY  
IS A LIFESTYLE"





## CATEGORY II - TIER 1

PROJECT NAME	PROJECT DESCRIPTION	ESTIMATED COST
514 Avalon Dr	48" RCP, 300'	\$169,118
215 Brandon Mill Cir - South	8'x4' RBC, 200'; system evaluation	\$437,648
266 Callaway Rd	trp 10'x4' RBC, 80'	\$533,218
364 Chappel Rd	dbl 8'x5' RBC, 70'	\$336,399
120 Deer Forest Trl	4'x3' RBC, 100'	\$145,508
315 Dogwood Trl	trp 7' x 7' RBC, 80'	\$595,879
120 Mercedes Trl	dbl 8'x4' RBC, 60'	\$224,070
130 Morning Dove Dr	dbl 10'x4' RBC, 70'	\$244,389
151 Patricia Ln	8'x4' RBC, 150'	\$295,527
199 Roberts Rd	7'x4' RBC, 85'	\$193,861
160 Scott Blvd	4'x2' RBC, 50'	\$99,114
175 Silver Leaf Dr	dbl 4'x3' RBC, 140'	\$247,827
503 Westbridge Dr	5'x3' RBC, 45'	\$89,733
517 Westbridge Dr	5'x3' RBC, 45'	\$93,082
<b>Tier 1 Subtotal</b>		<b>\$3,705,373</b>



General Information		Map	
Project ID			
Street Name	Avalon Dr		
Site Visit Date	6/11/2013		
Road Classification	Internal Local		
Project Notes			
Rural typical section			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2 - 12'		
Existing Shld Width (paved and grass) (feet)	4' (Grass)		
Existing Side Slopes	flat		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	\$ 4.00		
Pipe Type and Size	30", 300' CMP		
Pipe Condition (1-5) (1 is new)	\$ 3.00		
Pavement Type/Condition		Asphalt/Good	
Environmental Features			
Wetlands	None		
Ditches	X		
Utilities (Visual Inspection)			
Electric	Aerial		
Cable	Aerial		
Phone	Aerial		
Gas	None		
Water	X		
Sewer	None		
Other			
Stage Construction Options			
Close Location to Traffic		X	
Maintain One Lane - No Temp Pavement			
Maintain One Lane - Temp Pavement			
Stage Construction Notes:			
Proposed Design			
Roadway Section	Typical		
Culvert Size & Material	48" round RCP, 300' length		
Utility Relocations	Water main		
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$17,783	
Right of Way Cost	Assuming 2,000 sf outside of ROW	\$8,000	
Utility Relocation Cost	50 ft of water main	\$5,500	
Construction Cost	Applying 1/10 acre clearing and grubbing cost	\$127,834	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$169,118</b>	



**Photo 1:**



**Photo 2:**

Avalon Dr

**Photo Date:**

7/2/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	4.87	\$ 600.00	\$ 3,363.20
Curb and Gutter (LF)	\$ 28.56	30.60	\$ -	\$ -
Drain Inlet (EA)		3,000.00	\$ -	\$ -
4" Sidewalk (SY)	\$ 13.56	36.90	\$ -	\$ -
Guardrail (LF)	\$ 4.88	49.09	\$ -	\$ -
End Anchorage (EA)		1,380.00	\$ -	\$ -
Subtotal				\$ 3,363.20

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 4,637.64

Roadway Total \$ 8,000.84

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		10.38	\$ 600.00	\$ 6,228.00
30" CMP (LF)	\$ 19.62		\$ 300.00	\$ 5,886.00
48" RCP (LF)		193.20	\$ 300.00	\$ 57,960.00
Class A Conc (CY)		892.19	\$ 13.70	\$ 12,222.98
Steel (lb)		1.42	\$ -	\$ -
Pipe Bedding (CY)		48.60	\$ 66.67	\$ 3,240.00
Trench Backfill (CY)		2.99	\$ 477.04	\$ 1,425.40
Trench Compaction (CY)		6.36	\$ 381.63	\$ 2,427.18

Drainage Total \$ 89,389.55

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	0.71	\$ -	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	10,260.00	\$ 0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	4,428.00	\$ 1.00	\$ 4,428.00

Staging Total \$ 5,454.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	4.39	\$ 766.67	\$ 3,367.20
Temporary Grassing (AC)	855.60	\$ -	\$ -
Type C Silt Fence (LF)	4.24	\$ 600.00	\$ 2,541.60
Check Dam Type C Silt Fence (LF)	6.79	\$ 600.00	\$ 4,075.20
Erosion Control Mats (SY)	1.87	\$ 200.00	\$ 374.40
Landscape Mulch (SY)	3.58	\$ 200.00	\$ 715.20
Perm Grassing (AC)	1,402.20	\$ -	\$ -
Rip Rap Type 3 12" (SY)	60.98	\$ 66.67	\$ 4,065.60
Plastic Filter Fabric (SY)	5.72	\$ 66.67	\$ 381.60
4" Ditch Paving (SY)	54.65	\$ -	\$ -

Erosion Control Total \$ 15,520.80

Construction Cost Total \$ 118,365.19

Traffic Control (8% of Construction Total \$) \$ 9,469.22

Construction Cost Grand Total \$ 127,834.41

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	55.00	\$ -	\$ -
Buried	\$ 16.50	82.50	\$ -	\$ -
Wooden Pole	\$ 82.50	605.00	\$ -	\$ -
Phone				
Aerial	\$ 11.00	27.50	\$ -	\$ -
Buried	\$ 16.50	55.00	\$ -	\$ -
Wooden Pole	\$ 82.50	605.00	\$ -	\$ -
Cable				
Aerial	\$ 11.00	27.50	\$ -	\$ -
Buried	\$ 16.50	55.00	\$ -	\$ -
Wooden Pole	\$ 82.50	605.00	\$ -	\$ -
Gas				
4" main	\$ 16.50	66.00	\$ -	\$ -
Water				
8" main	\$ 16.50	93.50	\$ 50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		2,609.22	\$ -	\$ -
Sewer				
12" main	\$ 16.50	82.50	\$ -	\$ -
Utility Relocation Total				\$ 5,500.00

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		4.00	\$ 2,000.00
ROW Total			\$ 8,000.00



General Information		Map	
Project ID			
Street Name	Brandon Mill Cir - South		
Site Visit Date	5/22/13		
Road Classification	Minor road		
Project Notes			
Neighborhood drainage system evaluation and replacement. Urban typical section with valley gutter,			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-10'		
Existing Shld Width (paved and grass) (feet)	4'		
Existing Side Slopes	flat		
Existing Guardrail	none		
Depth fm Pavement to Top of Culvert (ft):	4		
Pipe Type and Size	72" CMP		
Pipe Condition (1-5) (1 is new)	5 (Installation)		
Condition Notes: no headwall upstream or down; bends restrict capacity; signs of flooding; pipe condition due to installation			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands	None		
Ditches	None		
Utilities (Visual Inspection)			
Electric	Buried		
Cable	Buried		
Phone	Buried		
Gas			
Water	Buried		
Sewer			
Other			
Stage Construction Options			
Close Location to Traffic		X	
Maintain One Lane - No Temp Pavement			
Maintain One Lane - Temp Pavement			
Stage Construction Notes: Close roadway;			
driveway over pipe; replacement impacts property to the right			
Proposed Design			
Roadway Section	Typical. Private driveway removal/replacement costed as 9' x 20' section of 4" sidewalk		
Culvert Size & Material	8' x 4' box, concrete, 200' length		
Utility Relocations	Electric, cable, phone, water		
Guardrail Replacement			
Miscellaneous Features	Assumed hydraulic analysis of existing system		
Planning Cost Estimate			
Type	Notes	Total	
System Evaluation		\$25,000	
Design	Includes 10% Construction Cost and surveying needs	\$42,841	
Right of Way Cost	Assuming project extends 7,500 sf beyond ROW	\$30,000	
Utility Relocation Cost	Buried utilities	\$26,400	
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$303,407	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$437,648</b>	



Photo 1:



Photo 2:

Brandon Mill Cir - South

Photo Date:

6/13/2016

Taken By:

Tony Hicks

Page:

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**Roadway Construction, Utility Relocation and ROW Quantity Calculations**

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	200.00	\$ 1,121.07
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	13.56	\$ 36.90	20.00	\$ 1,009.20
Guardrail (LF)	4.884	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
Subtotal				\$ 3,313.47
Grading Complete (5% of Rwy Items & Drng Total \$)				\$ 12,502.20

<b>Roadway Total</b>				<b>\$ 15,815.67</b>
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Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	814.81	\$ 8,457.78
72" CMP (LF)	\$ 54.00		200.00	\$ 32,400.00
72" RCP		\$ 390.00	0.00	\$ -
Class A Conc (CY)		\$ 892.19	183.68	\$ 163,877.09
Steel (lb)		\$ 1.42	21835.00	\$ 30,918.36
Pipe Bedding (CY)		\$ 48.60	74.80	\$ 3,635.28
Trench Backfill (CY)		\$ 2.99	921.50	\$ 2,753.43
Trench Compaction (CY)		\$ 6.36	737.20	\$ 4,688.57

<b>Drainage Total</b>				<b>\$ 246,730.51</b>
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Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0	\$ -

<b>Signing and Marking Total</b>			<b>\$ -</b>
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Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			0
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

<b>Staging Total</b>			<b>\$ 5,454.00</b>
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Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	200.00	\$ 878.40
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	800.00	\$ 3,388.80
Check Dam Type C Silt Fence (LF)	\$ 6.79	800.00	\$ 5,433.60
Erosion Control Mats (SY)	\$ 1.87	266.67	\$ 499.20
Landscape Mulch (SY)	\$ 3.58	266.67	\$ 953.60
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	26.67	\$ 1,626.24
Plastic Filter Fabric (SY)	\$ 5.72	26.67	\$ 152.64
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

<b>Erosion Control Total</b>			<b>\$ 12,932.48</b>
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<b>Construction Cost Total</b>			<b>\$ 280,932.66</b>
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Traffic Control (8% of Construction Total \$)			<b>\$ 22,474.61</b>
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<b>Construction Cost Grand Total</b>			<b>\$ 303,407.27</b>
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Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
<b>Electric</b>				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	75	\$ 7,425.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Phone</b>				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Cable</b>				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Gas</b>				
4" main	\$ 16.50	\$ 66.00		\$ -
<b>Water</b>				
8" main	\$ 16.50	\$ 93.50	75	\$ 8,250.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
<b>Sewer</b>				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 26,400.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	7500	\$ 30,000.00
<b>ROW Total</b>			<b>\$ 30,000.00</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>266 Callaway Rd.</b>		
<b>Site Visit Date</b>	5/21/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Rural Typical Section			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2 - 12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	2' (Grass)		
<b>Existing Side Slopes</b>	2:1		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	Assumed 3'		
<b>Pipe Type and Size</b>	60" CMP (egg)		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>		<b>Stage Construction Options</b>	
<b>Wetlands</b>	None	<b>Close Location to Traffic</b>	X
<b>Ditches</b>	Noted	<b>Maintain One Lane - No Temp Pavement</b>	
		<b>Maintain One Lane - Temp Pavement</b>	
		Stage Construction Notes: 45 mph posted speed	
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Aerial		
<b>Cable</b>	None		
<b>Phone</b>	Aerial		
<b>Gas</b>	None		
<b>Water</b>	Buried		
<b>Sewer</b>	None		
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	triple 10' x 4' box, concrete, 80' length. Cost of removing elliptical CMP assumed to be equal to circular CMP		
<b>Utility Relocations</b>	Water		
<b>Guardrail Replacement</b>	Need to install guardrail due to side slopes and culvert installation		
<b>Miscellaneous Features</b>	Zone A, Floodplain Analysis Required		
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% design cost and surveying needs	\$53,724	
<b>Right of Way Cost</b>	Assuming project extends 11,000 sf beyond ROW	\$44,000	
<b>Utility Relocation Cost</b>	Buried water main	\$8,250	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing needed	\$412,243	
<b>Environmental Permits</b>	Includes Zone A Floodplain analysis	\$15,000	
<b>Total Planning Estimate</b>		<b>\$533,218</b>	





**Photo 1:**



**Photo 2:**

Callaway Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**

Callaway Road



**Photo 4:**

**Photo Date:**

9/26/2012

**Taken By:**

Tony Hicks

**Page:**

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	864.00	\$ 4,843.01
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	600.00	\$ 32,385.60
End Anchorage (EA)		\$ 1,380.00	2.00	\$ 2,760.00
<b>Subtotal</b>				<b>\$ 39,988.61</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 17,173.56

**Roadway Total \$ 57,162.17**

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	853.33	\$ 8,857.60
60" CMP (LF)	\$ 24.60		80.00	\$ 5,904.00
84" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	262.44	\$ 234,145.82
Steel (lb)		\$ 1.42	30,224.00	\$ 42,797.18
Pipe Bedding (CY)		\$ 48.60	97.20	\$ 4,723.92
Trench Backfill (CY)		\$ 2.99	873.47	\$ 2,609.92
Trench Compaction (CY)		\$ 6.36	698.77	\$ 4,444.20

**Drainage Total \$ 303,482.64**

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

**Signing and Marking Total \$ -**

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

**Staging Total \$ 5,454.00**

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	224.00	\$ 983.81
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	640.00	\$ 2,711.04
Check Dam Type C Silt Fence (LF)	\$ 6.79	640.00	\$ 4,346.88
Erosion Control Mats (SY)	\$ 1.87	213.33	\$ 399.36
Landscape Mulch (SY)	\$ 3.58	213.33	\$ 762.88
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	96.00	\$ 5,854.46
Plastic Filter Fabric (SY)	\$ 5.72	96.00	\$ 549.50
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

**Erosion Control Total \$ 15,607.94**

**Construction Cost Total \$ 381,706.75**

Traffic Control (8% of Construction Total \$) \$ 30,536.54

**Construction Cost Grand Total \$ 412,243.29**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Phone				
Cable				
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	75.00	\$ 8,250.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
<b>Utility Relocation Total</b>				<b>\$ 8,250.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	11,000.00	\$ 44,000.00
<b>ROW Total</b>			<b>\$ 44,000.00</b>

General Information		Map	
Project ID			
Street Name	Chappell Rd.		
Site Visit Date	5/21/13		
Road Classification	Minor arterial		
Project Notes			
Rural Typical Section			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2 - 12'		
Existing Shld Width (paved and grass) (feet)	1' - 2'		
Existing Side Slopes	1.5:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	6'		
Pipe Type and Size	1-72" CMP		
Pipe Condition (1-5) (1 is new)	3		
Condition Notes:			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands	Upstream (?)		
Ditches	Along road		
Utilities (Visual Inspection)			
Electric	Aerial		
Cable	Buried		
Phone	Buried		
Gas			
Water	Buried		
Sewer			
Other			
Proposed Design			
Roadway Section	Typical. For costing purposes, temporary road consists of 8" gravel fill		
Culvert Size & Material	dbl 8' x 5' box, concrete, 70' length		
Utility Relocations	Cable, telephone, water		
Guardrail Replacement	Proposed Guardrail Installation due to proposed culvert(s) and side slopes		
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$28,964	
Right of Way Cost	Assuming project extends 16,250 sf beyond ROW	\$32,500	
Utility Relocation Cost	Buried utilities	\$25,300	
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$239,635	
Environmental Permits	Permits, Zone A Floodplain Analysis	\$10,000	
<b>Total Planning Estimate</b>		<b>\$336,399</b>	



**Photo 1:**



**Photo 2:**

364 Chappell Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

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**Photo 3:**



**Photo 4:**

364 Chappell Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	432.00	\$ 2,421.50
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	625.00	\$ 33,735.00
End Anchorage (EA)		\$ 1,380.00	2.00	\$ 2,760.00
Subtotal				\$ 38,916.50
Grading Complete (5% of Rwy Items & Drng Total \$)				\$ 10,164.98
Roadway Total				\$ 49,081.49
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	606.67	\$ 6,297.20
72" CMP (LF)	\$ 63.00		70.00	\$ 13,230.00
72" RCP (LF)		\$ 390.00	0.00	\$ -
Class A Conc (CY)		\$ 892.19	132.51	\$ 118,223.83
Steel (lb)		\$ 1.42	13,383.00	\$ 18,950.33
Pipe Bedding (CY)		\$ 48.60	48.00	\$ 2,332.80
Trench Backfill (CY)		\$ 2.99	662.33	\$ 1,979.05
Trench Compaction (CY)		\$ 6.36	529.87	\$ 3,369.95
Drainage Total				\$ 164,383.16
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	72.00	\$ 50.98
Signing and Marking Total				\$ 50.98
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Gravel Road (SY)		\$ 15.42	977.78	\$ 15,077.33
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
Staging Total				\$ 20,633.29
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	92.00	\$ 404.06
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	280.00	\$ 1,186.08
Check Dam Type C Silt Fence (LF)		\$ 6.79	280.00	\$ 1,901.76
Erosion Control Mats (SY)		\$ 1.87	93.33	\$ 174.72
Landscape Mulch (SY)		\$ 3.58	93.33	\$ 333.76
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	48.00	\$ 2,927.23
Plastic Filter Fabric (SY)		\$ 5.72	48.00	\$ 274.75
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
Erosion Control Total				\$ 7,202.37
Construction Cost Total				\$ 241,351.28
Traffic Control (8% of Construction Total \$)				\$ 19,308.10
Construction Cost Grand Total				\$ 260,659.38
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	100.00	\$ 7,150.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	100.00	\$ 7,150.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	100.00	\$ 11,000.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
Utility Relocation Total				\$ 25,300.00
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	16,250.00	\$ 65,000.00	
ROW Total			\$ 65,000.00	

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>120 Deer Forest Trail</b>		
<b>Site Visit Date</b>	5/21/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Urban Typical Section with Valley Gutter			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2 - 12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	None		
<b>Existing Side Slopes</b>	Flat		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	2		
<b>Pipe Type and Size</b>	36" CMP, 100'		
<b>Pipe Condition (1-5) (1 is new)</b>	5		
Condition Notes: Headwall failed on downstream side, active erosion, effectively 0% capacity			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
		<b>Stage Construction Options</b>	
		<b>Close Location to Traffic</b>	X
		<b>Maintain One Lane - No Temp Pavement</b>	
		<b>Maintain One Lane - Temp Pavement</b>	
		Stage Construction Notes:	
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	4' x 3' box, concrete, 100' length. Cost of removing headwalls assumed equal to removal of entire length of pipe.		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$13,446	
<b>Right of Way Cost</b>	Assuming project extends 3,000 sf beyond ROW	\$20,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$17,600	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$84,461	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$145,508</b>	



Deer Forest Trail



**Photo 1:**



**Photo 2:**

**Photo Date:**

5/21/2013

**Taken By:**

David King

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**Photo 3:**



**Photo 4:**

Deer Forest Trail

**Photo Date:**

5/21/2013

**Taken By:**

David King

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	144.00	\$ 807.17
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 1,990.37</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 3,158.26

Roadway Total \$ 5,148.63

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	133.33	\$ 1,384.00
36" CMP (LF)	\$ 19.62		200.00	\$ 11,772.00
36" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	44.61	\$ 39,800.51
Steel (lb)		\$ 1.42	4,295.00	\$ 6,081.72
Pipe Bedding (CY)		\$ 48.60	22.70	\$ 1,103.22
Trench Backfill (CY)		\$ 2.99	127.97	\$ 382.36
Trench Compaction (CY)		\$ 6.36	102.37	\$ 651.09

Drainage Total \$61,174.91

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,454.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	50.67	\$ 222.53
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	400.00	\$ 1,694.40
Check Dam Type C Silt Fence (LF)	\$ 6.79	400.00	\$ 2,716.80
Erosion Control Mats (SY)	\$ 1.87	133.33	\$ 249.60
Landscape Mulch (SY)	\$ 3.58	133.33	\$ 476.80
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	16.00	\$ 975.74
Plastic Filter Fabric (SY)	\$ 5.72	16.00	\$ 91.58
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 6,427.46

Construction Cost Total \$78,204.99

Traffic Control (8% of Construction Total \$) \$ 6,256.40

Construction Cost Grand Total \$84,461.39

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$17,600.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	5,000.00	\$ 20,000.00
<b>ROW Total</b>			<b>\$ 20,000.00</b>

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>Dogwood Trail</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor arterial		
Project Notes			
Rural Typical Section			
Field Notes			
Design (Existing Site Features)			
<b>Existing Road Laneage</b>	2-12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	1' - 2'		
<b>Existing Side Slopes</b>	1.5:1		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	12		
<b>Pipe Type and Size</b>	2-120" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes: Large down stream drop; home in down stream flood plain; bottom of pipe rusted through			
<b>Pavement Type/Condition</b>	Asphalt/Good		
Environmental Features			
<b>Wetlands</b>	None		
<b>Ditches</b>	Noted		
Utilities (Visual Inspection)			
<b>Electric</b>	Aerial		
<b>Cable</b>	Aerial		
<b>Phone</b>	Aerial		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>	Buried		
<b>Other</b>			
Proposed Design			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	triple 7' x 7' box, concrete, 80' length		
<b>Utility Relocations</b>	Electric, cable, phone, water, sewer		
<b>Guardrail Replacement</b>	Need Guardrail due to side slopes and culvert installation		
<b>Miscellaneous Features</b>	Zone AE Floodplain and Floodway Analysis required		
Planning Cost Estimate			
Type	Notes	Total	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$55,456	
<b>Right of Way Cost</b>	Assuming project extends 13,900 sf beyond ROW	\$55,600	
<b>Utility Relocation Cost</b>	Aerial and buried utilities	\$37,263	
<b>Construction Cost</b>	Assuming 1/5 acre clearing and grubbing	\$429,561	
<b>Environmental Permits</b>	Permits, Zone AE flood study	\$18,000	
<b>Total Planning Estimate</b>		<b>\$595,879</b>	



**Photo 1:**



**Photo 2:**

Dogwood Trail

**Photo Date:**

5/21/2013

**Taken By:**

David King

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**Photo 3:**



**Photo 4:**

Dogwood Trail

**Photo Date:**

5/21/2013

**Taken By:**

David King

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1,104.00	\$ 6,188.29
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	600.00	\$ 32,385.60
End Anchorage (EA)		\$ 1,380.00	4.00	\$ 5,520.00
<b>Subtotal</b>				<b>\$ 44,093.89</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 17,795.14

**Roadway Total \$ 61,889.03**

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	2,112.59	\$ 21,928.71
120" CMP (LF)	\$ 90.00		160.00	\$ 43,200.00
120" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	212.60	\$ 189,679.17
Steel (lb)		\$ 1.42	23,893.00	\$ 33,832.49
Pipe Bedding (CY)		\$ 48.60	69.90	\$ 3,397.14
Trench Backfill (CY)		\$ 2.99	2,448.17	\$ 7,315.14
Trench Compaction (CY)		\$ 6.36	1,958.54	\$ 12,456.31

**Drainage Total \$311,808.96**

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	92.00	\$ 65.14

**Signing and Marking Total \$ 65.14**

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.20	\$ 2,052.00
Temporary Gravel Road (SY)	\$ 15.42	0.00	\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	2.00	\$ 8,856.00

**Staging Total \$ 11,038.27**

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	143.11	\$ 628.54
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	640.00	\$ 2,711.04
Check Dam Type C Silt Fence (LF)	\$ 6.79	640.00	\$ 4,346.88
Erosion Control Mats (SY)	\$ 1.87	213.33	\$ 399.36
Landscape Mulch (SY)	\$ 3.58	213.33	\$ 762.88
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	61.33	\$ 3,740.35
Plastic Filter Fabric (SY)	\$ 5.72	61.33	\$ 351.07
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

**Erosion Control Total \$ 12,940.13**

**Construction Cost Total \$397,741.53**

**Traffic Control (8% of Construction Total \$) \$ 31,819.32**

**Construction Cost Grand Total \$429,560.85**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	100.00	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	3.00	\$ 2,062.50
Phone				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	100.00	\$ 11,000.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	100.00	\$ 9,900.00
<b>Utility Relocation Total</b>				<b>\$ 37,262.50</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	13,900.00	\$ 55,600.00
<b>ROW Total</b>			<b>\$ 55,600.00</b>

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>120 Merced Trail</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Internal Local		
Project Notes			
Urban typical with valley gutter; subdivision street			
Field Notes			
Design (Existing Site Features)			
<b>Existing Road Laneage</b>	2-12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4'		
<b>Existing Side Slopes</b>	flat		
<b>Existing Guardrail</b>	none		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	5		
<b>Pipe Type and Size</b> (ellip. CMP)	2-48"x72",55'		
<b>Pipe Condition (1-5) (1 is new)</b>	5		
Condition Notes: Both up to 25% blocked, structurally unsound, sag in top of pipe, debris/rip rap in pipe			
<b>Pavement Type/Condition</b>	Asphalt/Good		
Environmental Features			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
Utilities (Visual Inspection)			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
Proposed Design			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	dbl 8' x 4' box, concrete, 60' length. Cost of elliptical pipe removal assumed to equal to removal of round 60" CMP.		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
Planning Cost Estimate			
Type	Notes	Total	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$21,679	
<b>Right of Way Cost</b>	Assuming project extends 2,000 sf beyond ROW	\$8,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$17,600	
<b>Construction Cost</b>	Assuming 1/5 acre clearing and grubbing	\$166,790	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$224,070</b>	



**Photo 1:**



**Photo 2:**

**Mercedes Trail**

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

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**Photo 3:**



**Photo 4:**

Mercedes Trail

**Photo Date:**

5/21/2013

**Taken By:**

David King

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	432.00	\$ 2,421.50
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	36.00	\$ 2,129.76
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 4,551.26</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 6,723.90</b>
<b>Roadway Total</b>				<b>\$ 11,275.17</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	400.00	\$ 4,152.00
60" CMP (LF)	\$ 24.60		110.00	\$ 8,118.00
60" RCP		\$ 259.20	0.00	\$ -
Class A Conc (CY)		\$ 892.19	108.16	\$ 96,499.05
Steel (lb)		\$ 1.42	11,182.00	\$ 15,833.71
Pipe Bedding (CY)		\$ 48.60	41.30	\$ 2,007.18
Trench Backfill (CY)		\$ 2.99	410.70	\$ 1,227.17
Trench Compaction (CY)		\$ 6.36	328.56	\$ 2,089.64
<b>Drainage Total</b>				<b>\$ 129,926.76</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	72.00	\$ 50.98
<b>Signing and Marking Total</b>				<b>\$ 50.98</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.20	\$ 2,052.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 6,581.95</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	72.00	\$ 316.22
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	240.00	\$ 1,016.64
Check Dam Type C Silt Fence (LF)		\$ 6.79	240.00	\$ 1,630.08
Erosion Control Mats (SY)		\$ 1.87	80.00	\$ 149.76
Landscape Mulch (SY)		\$ 3.58	80.00	\$ 286.08
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	48.00	\$ 2,927.23
Plastic Filter Fabric (SY)		\$ 5.72	48.00	\$ 274.75
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 6,600.77</b>
<b>Construction Cost Total</b>				<b>\$ 154,435.62</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 12,354.85</b>
<b>Construction Cost Grand Total</b>				<b>\$ 166,790.47</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 17,600.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	2,000.00	\$ 8,000.00	
<b>ROW Total</b>			<b>\$ 8,000.00</b>	

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	Morning Dove Dr.		
<b>Site Visit Date</b>	5/21/13		
<b>Road Classification</b>	Minor road		
Project Notes			
Urban typical section valley gutter			
Field Notes			
Design (Existing Site Features)			
<b>Existing Road Laneage</b>	2-12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4'		
<b>Existing Side Slopes</b>	flat		
<b>Existing Guardrail</b>	none		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	2'		
<b>Pipe Type and Size</b>	1-72", 1-84"		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
Environmental Features			
<b>Wetlands</b>	None identified		
<b>Ditches</b>	None		
Utilities (Visual Inspection)			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>	Not Sighted		
<b>Water</b>	Buried		
<b>Sewer</b>	Buried		
<b>Other</b>			
Proposed Design			
<b>Roadway Section</b>	Replace in kind. For costing purposes, temporary road consists of 8" gravel fill		
<b>Culvert Size &amp; Material</b>	double 10' x 4' box, concrete, 70' length		
<b>Utility Relocations</b>	Electric, Cable, Phone, Water, Sewer		
<b>Guardrail Replacement</b>	No		
<b>Miscellaneous Features</b>			
Planning Cost Estimate			
Type	Notes	Total	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$22,779	
<b>Right of Way Cost</b>	Assuming project does not extend beyond ROW	\$0	
<b>Utility Relocation Cost</b>	Buried utilities	\$33,825	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$177,785	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$244,389</b>	



**Photo 1:**



**Photo 2:**

130 Morning Dove Drive

**Photo Date:**

5/17/1013

**Taken By:**

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	528.00	\$ 2,959.62
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	44.00	\$ 2,603.04
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 5,562.66</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 6,949.20

Roadway Total \$ 12,511.86

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	570.37	\$ 5,920.44
72" CMP (LF)	\$ 54.00		70.00	\$ 3,780.00
84" CMP	\$ 63.00		70.00	\$ 4,410.00
Class A Conc (CY)		\$ 892.19	106.88	\$ 95,357.05
Steel (lb)		\$ 1.42	11,505.00	\$ 16,291.08
Pipe Bedding (CY)		\$ 48.60	58.70	\$ 2,852.82
Trench Backfill (CY)		\$ 2.99	595.60	\$ 1,779.64
Trench Compaction (CY)		\$ 6.36	476.48	\$ 3,030.39

Drainage Total \$ 133,421.43

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Gravel Road (SY)	\$ 15.42	222.22	\$ 3,426.67
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 8,880.67

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	112.44	\$ 493.86
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	420.00	\$ 1,779.12
Check Dam Type C Silt Fence (LF)	\$ 6.79	420.00	\$ 2,852.64
Erosion Control Mats (SY)	\$ 1.87	140.00	\$ 262.08
Landscape Mulch (SY)	\$ 3.58	140.00	\$ 500.64
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	58.67	\$ 3,577.73
Plastic Filter Fabric (SY)	\$ 5.72	58.67	\$ 335.81
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 9,801.87

Construction Cost Total \$ 164,615.83

Traffic Control (8% of Construction Total \$) \$ 13,169.27

Construction Cost Grand Total \$ 177,785.10

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	75.00	\$ 7,425.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	75.00	\$ 8,250.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	75.00	\$ 7,425.00
<b>Utility Relocation Total</b>				<b>\$ 33,825.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	0.00	\$ -
<b>ROW Total</b>			<b>\$ -</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>Patricia Lane</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Urban typical section with curb and gutter			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2 - 10'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4'		
<b>Existing Side Slopes</b>	Flat		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	2.5		
<b>Pipe Type and Size</b>	54" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes: Joint failure, signs of rust, downstream plunge pool needed, eroded drop, holes from scour on top, rip rap/debris inside of pipe			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Aerial		
<b>Cable</b>	Aerial		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>			
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	8' x 4' box, concrete, 150' length		
<b>Utility Relocations</b>	Pole next to pipe, phone, cable, electric		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$26,254	
<b>Right of Way Cost</b>	Assuming project extends 10,000 sf beyond ROW	\$40,000	
<b>Utility Relocation Cost</b>	Buried utilities, pole	\$6,738	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$212,536	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$295,527</b>	



**Photo 1:**



**Photo 2:**

151 Patricia Lane

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

151 Patricia Lane

**Photo Date:**

5/21/2013

**Taken By:**

David King

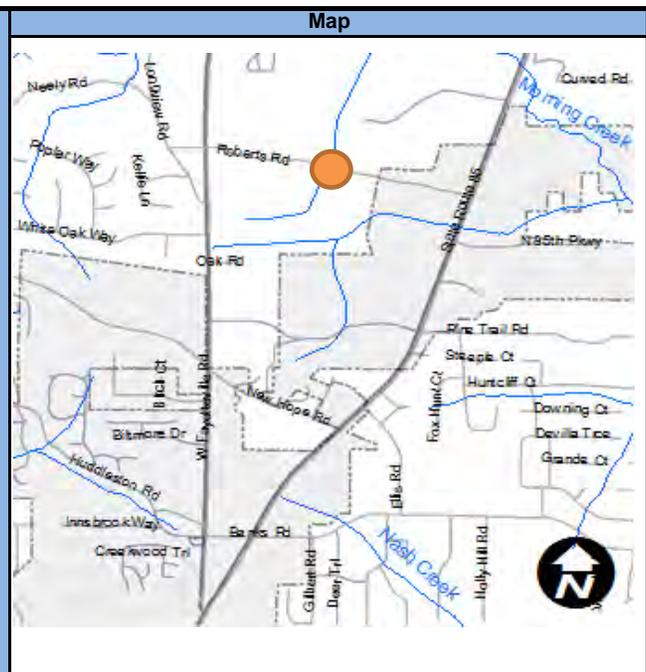
**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	200.00	\$ 1,121.07
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 1,121.07</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 8,629.47</b>
<b>Roadway Total</b>				<b>\$ 9,750.54</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	444.44	\$ 4,613.33
54" CMP (LF)	\$ 24.60		150.00	\$ 11,070.00
54" RCP		\$ 233.28	0.00	\$ -
Class A Conc (CY)		\$ 892.19	141.03	\$ 125,825.27
Steel (lb)		\$ 1.42	16,505.00	\$ 23,371.08
Pipe Bedding (CY)		\$ 48.60	56.30	\$ 2,736.18
Trench Backfill (CY)		\$ 2.99	477.03	\$ 1,425.38
Trench Compaction (CY)		\$ 6.36	381.63	\$ 2,427.15
<b>Drainage Total</b>				<b>\$ 171,468.39</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	144.44	\$ 634.40
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	600.00	\$ 2,541.60
Check Dam Type C Silt Fence (LF)		\$ 6.79	600.00	\$ 4,075.20
Erosion Control Mats (SY)		\$ 1.87	200.00	\$ 374.40
Landscape Mulch (SY)		\$ 3.58	200.00	\$ 715.20
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	26.67	\$ 1,626.24
Plastic Filter Fabric (SY)		\$ 5.72	26.67	\$ 152.64
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 10,119.68</b>
<b>Construction Cost Total</b>				<b>\$ 196,792.61</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 15,743.41</b>
<b>Construction Cost Grand Total</b>				<b>\$ 212,536.02</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	25.00	\$ 2,475.00
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	25.00	\$ 1,787.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	25.00	\$ 1,787.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 6,737.50</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	10,000.00	\$ 40,000.00	
<b>ROW Total</b>			<b>\$ 40,000.00</b>	

General Information	
Project ID	
Street Name	199 Roberts Road
Site Visit Date	5/21/13
Road Classification	County Local
Project Notes	
Local road with sub standard horizontal and vertical alignments	
Field Notes	
Design (Existing Site Features)	
Existing Road Laneage	2-10' (dirt/gravel)
Existing Shld Width (paved and grass) (feet)	None
Existing Side Slopes	flat
Existing Guardrail	None
Depth fm Pavement to Top of Culvert (ft):	None
Pipe Type and Size	None
Pipe Condition (1-5) (1 is new)	n/a
Condition Notes:	
Pavement Type/Condition	gravel dirt/ poor
Environmental Features	
Wetlands	Noted
Ditches	None
Utilities (Visual Inspection)	
Electric	Aerial
Cable	Aerial
Phone	Aerial
Gas	
Water	Buried
Sewer	
Other	



Stage Construction Options	
Close Location to Traffic	
Maintain One Lane - No Temp Pavement	X
Maintain One Lane - Temp Pavement	
Stage Construction Notes:	

Proposed Design	
Roadway Section	
Culvert Size & Material	7'x4' box, concrete, 85' length
Utility Relocations	Two utility poles. Aerial electric, cable, phone. Buried water main
Guardrail Replacement	
Miscellaneous Features	

Planning Cost Estimate		
Type	Notes	Total
Design	Includes 10% Construction Cost and surveying needs	\$17,381
Right of Way Cost	Assuming project extends 4,000 sf beyond ROW	\$16,000
Utility Relocation Cost	Aerial utilities, poles, and buried water main	\$26,675
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$123,805
Environmental Permits	Assuming minimal environmental permitting required	\$10,000

<b>Total Planning Estimate</b>	<b>\$193,861</b>
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**Photo 1:**



**Photo 2:**

199 Roberts Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	0.00	\$ -
Gravel Road (SY)		\$ 15.42	83.11	\$ 1,281.57
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 1,281.57</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 4,773.36</b>
<b>Roadway Total</b>				<b>\$ 6,054.94</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	279.08	\$ 2,896.89
60" CMP (LF)	\$ 24.60		85.00	\$ 6,273.00
60" RCP		\$ 259.20	0.00	\$ -
Class A Conc (CY)		\$ 892.19	77.53	\$ 69,171.34
Steel (lb)		\$ 1.42	8,370.00	\$ 11,851.92
Pipe Bedding (CY)		\$ 48.60	29.00	\$ 1,409.40
Trench Backfill (CY)		\$ 2.99	319.85	\$ 955.72
Trench Compaction (CY)		\$ 6.36	255.88	\$ 1,627.42
<b>Drainage Total</b>				<b>\$ 94,185.68</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.20	\$ 2,052.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 6,480.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	119.00	\$ 522.65
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	340.00	\$ 1,440.24
Check Dam Type C Silt Fence (LF)		\$ 6.79	340.00	\$ 2,309.28
Erosion Control Mats (SY)		\$ 1.87	113.33	\$ 212.16
Landscape Mulch (SY)		\$ 3.58	113.33	\$ 405.28
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	45.33	\$ 2,764.61
Plastic Filter Fabric (SY)		\$ 5.72	45.33	\$ 259.49
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 7,913.70</b>
<b>Construction Cost Total</b>				<b>\$ 114,634.32</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 9,170.75</b>
<b>Construction Cost Grand Total</b>				<b>\$ 123,805.07</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	100.00	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Phone				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	100.00	\$ 11,000.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 26,675.00</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	4,000.00	\$ 16,000.00
<b>ROW Total</b>				<b>\$ 16,000.00</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>Scott Blvd.</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Internal Local		
<b>Project Notes</b>			
Rural typical section. Point is close to FEMA Zone A flood boundary. Including cost of Zone A flood study based on limited location information.			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-10.5'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4' Grass		
<b>Existing Side Slopes</b>	6:1 to flat		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	10 - 11		
<b>Pipe Type and Size</b>	18" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	5		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	Upstream		
<b>Ditches</b>	Noted		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Aerial		
<b>Cable</b>	Aerial		
<b>Phone</b>	Aerial		
<b>Gas</b>	None		
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>	Typical rural. Driveway removal/replacement costed as 20' x 9' concrete sidewalk		
<b>Culvert Size &amp; Material</b>	4' x 2' box, concrete, 50'		
<b>Utility Relocations</b>	Utility poles, aerial lectric, cable,phone, buried water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>	Series of three, 18" pipes. Upper two are within reasonable sizes, second one in series could be upsized to 24". Downstream-most culvert is primary replacement need.		
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$17,008	
<b>Right of Way Cost</b>	Assuming project extends 2,000 sf beyond ROW	\$8,000	
<b>Utility Relocation Cost</b>	Aerial utilities, poles, and buried water main	\$14,025	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$45,081	
<b>Environmental Permits</b>	Permitting, Zone A flood study	\$15,000	
<b>Total Planning Estimate</b>		<b>\$99,114</b>	



**Photo 1:**



**Photo 2:**

160 Scott Blvd.

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

160 Scott Blvd.

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	126.00	\$ 706.27
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	20.00	\$ 1,009.20
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 1,715.47</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 1,550.79

Roadway Total \$ 3,266.27

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	150.00	\$ 1,557.00
18" CMP (LF)	\$ 5.74		50.00	\$ 860.40
18" RCP		\$ 36.00	0.00	\$ -
Class A Conc (CY)		\$ 892.19	24.56	\$ 21,912.14
Steel (lb)		\$ 1.42	2,189.00	\$ 3,099.62
Pipe Bedding (CY)		\$ 48.60	11.60	\$ 563.76
Trench Backfill (CY)		\$ 2.99	161.90	\$ 483.76
Trench Compaction (CY)		\$ 6.36	129.52	\$ 823.75

Drainage Total \$ 29,300.43

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,454.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	19.33	\$ 84.91
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	200.00	\$ 847.20
Check Dam Type C Silt Fence (LF)	\$ 6.79	200.00	\$ 1,358.40
Erosion Control Mats (SY)	\$ 1.87	66.67	\$ 124.80
Landscape Mulch (SY)	\$ 3.58	66.67	\$ 238.40
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	16.00	\$ 975.74
Plastic Filter Fabric (SY)	\$ 5.72	16.00	\$ 91.58
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 3,721.04

Construction Cost Total \$ 41,741.73

Traffic Control (8% of Construction Total \$) \$ 3,339.34

Construction Cost Grand Total \$ 45,081.07

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	50.00	\$ 3,300.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Phone				
Aerial	\$ 11.00	\$ 27.50	50.00	\$ 1,925.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	50.00	\$ 1,925.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 14,025.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	2,000.00	\$ 8,000.00
<b>ROW Total</b>			<b>\$ 8,000.00</b>

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	Silver Leaf Drive		
<b>Site Visit Date</b>	5/21/13		
<b>Road Classification</b>	Internal Local		
<b>Project Notes</b>			
Urban typical w/ valley gutter. Point is close to FEMA Zone A flood boundary. Adding cost of Zone A flood study given limited location information			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	10' Grass		
<b>Existing Side Slopes</b>	4:1		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	5		
<b>Pipe Type and Size</b>	1-54" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes:			
<b>Pavement Type/Condition</b>	Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	X (downstream)		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Aerial		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>	Buried		
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Stage Construction Options</b>			
<b>Close Location to Traffic</b>	X		
<b>Maintain One Lane - No Temp Pavement</b>			
<b>Maintain One Lane - Temp Pavement</b>			
Stage Construction Notes: Replace inlet on each side			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	dbl 4' x 3' box, concrete, 140'		
<b>Utility Relocations</b>	Phone, cable, gas, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$29,259	
<b>Right of Way Cost</b>	Assuming project extends 4,800 sf beyond ROW	\$19,200	
<b>Utility Relocation Cost</b>	Buried utilities	\$16,775	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$167,593	
<b>Environmental Permits</b>	Permitting, Zone A flood study	\$15,000	
<b>Total Planning Estimate</b>		<b>\$247,827</b>	



**Photo 1:**



**Photo 2:**

175 Silver Leaf Drive

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	240.00	\$ 1,345.28
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 8,528.48</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 6,675.57</b>
<b>Roadway Total</b>				<b>\$ 15,204.05</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	544.44	\$ 5,651.33
54" CMP (LF)	\$ 24.60		140.00	\$ 10,332.00
54" RCP		\$ 217.35	0.00	\$ -
Class A Conc (CY)		\$ 892.19	92.81	\$ 82,803.97
Steel (lb)		\$ 1.42	13,265.00	\$ 18,783.24
Pipe Bedding (CY)		\$ 48.60	52.60	\$ 2,556.36
Trench Backfill (CY)		\$ 2.99	601.29	\$ 1,796.65
Trench Compaction (CY)		\$ 6.36	481.03	\$ 3,059.36
<b>Drainage Total</b>				<b>\$ 124,982.91</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	128.89	\$ 566.08
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	560.00	\$ 2,372.16
Check Dam Type C Silt Fence (LF)		\$ 6.79	560.00	\$ 3,803.52
Erosion Control Mats (SY)		\$ 1.87	186.67	\$ 349.44
Landscape Mulch (SY)		\$ 3.58	186.67	\$ 667.52
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	26.67	\$ 1,626.24
Plastic Filter Fabric (SY)		\$ 5.72	26.67	\$ 152.64
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 9,537.60</b>
<b>Construction Cost Total</b>				<b>\$ 155,178.56</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 12,414.28</b>
<b>Construction Cost Grand Total</b>				<b>\$ 167,592.85</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	50.00	\$ 4,125.00
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 16,775.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	4,800.00	\$ 19,200.00	
<b>ROW Total</b>			<b>\$ 19,200.00</b>	



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>503 Westbridge Drive</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Internal Local		
<b>Project Notes</b>			
Urban typical section with Curb and gutter			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	None		
<b>Existing Side Slopes</b>	Flat		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	3		
<b>Pipe Type and Size (with headwall, 45°)</b>	48" CMP; 45'		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes: Debris in channel; approx. 1.5' drop in last section of pipe; US filled/damaged to 3.5'			
<b>Pavement Type/Condition</b>	Good/Asphalt		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	5' x 3' box, concrete, 45' Length		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$10,078	
<b>Right of Way Cost</b>	Assuming project extends 1,200 sf beyond ROW	\$4,800	
<b>Utility Relocation Cost</b>	Buried utilities	\$14,080	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$50,776	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$89,733</b>	



**Photo 1:**



**Photo 2:**

503 Westbridge Drive

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$0.73	\$4.87	168.00	\$941.70
Curb and Gutter (LF)	\$28.56	\$30.60	20.00	\$1,183.20
Drain Inlet (EA)		\$3,000.00	0.00	\$0.00
4" Sidewalk (SY)	\$13.56	\$36.90	0.00	\$0.00
Guardrail (LF)	\$4.88	\$49.09	0.00	\$0.00
End Anchorage (EA)		\$1,380.00	0.00	\$0.00
<b>Subtotal</b>				<b>\$2,124.90</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$1,806.26</b>
<b>Roadway Total</b>				<b>\$3,931.16</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$10.38	93.33	\$968.80
48" CMP (LF)	\$24.60		45.00	\$3,321.00
48" RCP		\$193.20	0.00	\$0.00
Class A Conc (CY)		\$892.19	27.85	\$24,842.97
Steel (lb)		\$1.42	2,529.50	\$3,581.77
Pipe Bedding (CY)		\$48.60	12.20	\$592.92
Trench Backfill (CY)		\$2.99	85.80	\$256.37
Trench Compaction (CY)		\$6.36	68.64	\$436.55
<b>Drainage Total</b>				<b>\$34,000.39</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$0.71	0.00	\$0.00
<b>Signing and Marking Total</b>				<b>\$0.00</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$10,260.00	0.10	\$1,026.00
Temporary Pavement				\$0.00
Temporary Drainage (Stream Diversion)		\$4,428.00	1.00	\$4,428.00
<b>Staging Total</b>				<b>\$5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$4.39	16.33	\$71.74
Temporary Grassing (AC)		\$855.60	0.00	\$0.00
Type C Silt Fence (LF)		\$4.24	180.00	\$762.48
Check Dam Type C Silt Fence (LF)		\$6.79	180.00	\$1,222.56
Erosion Control Mats (SY)		\$1.87	60.00	\$112.32
Landscape Mulch (SY)		\$3.58	60.00	\$214.56
Perm Grassing (AC)		\$1,402.20	0.00	\$0.00
Rip Rap Type 3 12" (SY)		\$60.98	18.67	\$1,138.37
Plastic Filter Fabric (SY)		\$5.72	18.67	\$106.85
4" Ditch Paving (SY)		\$54.65	0.00	\$0.00
<b>Erosion Control Total</b>				<b>\$3,628.87</b>
<b>Construction Cost Total</b>				<b>\$47,014.42</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$3,761.15</b>
<b>Construction Cost Grand Total</b>				<b>\$50,775.57</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$11.00	\$55.00		\$0.00
Buried	\$16.50	\$82.50	40.00	\$3,960.00
Wooden Pole	\$82.50	\$605.00		\$0.00
Phone				
Aerial	\$11.00	\$27.50		\$0.00
Buried	\$16.50	\$55.00	40.00	\$2,860.00
Wooden Pole	\$82.50	\$605.00		\$0.00
Cable				
Aerial	\$11.00	\$27.50		\$0.00
Buried	\$16.50	\$55.00	40.00	\$2,860.00
Wooden Pole	\$82.50	\$605.00		\$0.00
Gas				
4" main	\$16.50	\$66.00		\$0.00
Water				
8" main	\$16.50	\$93.50	40.00	\$4,400.00
Relocate Fire Hydrant (EA)		\$2,609.22		\$0.00
Sewer			0.00	\$0.00
12" main	\$16.50	\$82.50	0.00	\$0.00
<b>Utility Relocation Total</b>				<b>\$14,080.00</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$4.00	1,200.00	\$4,800.00
<b>ROW Total</b>				<b>\$4,800.00</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	517 Westbridge Drive		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Internal Local		
<b>Project Notes</b>			
Urban typical section with Curb and gutter			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	None		
<b>Existing Side Slopes</b>	Flat		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	3		
<b>Pipe Type and Size</b>	54" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes: 0.5' drop; 1' of sand in pipe (45' pipe length); Capacity Issue			
<b>Pavement Type/Condition</b>			
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	5' x 3' box, concrete, 45' length		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$10,091	
<b>Right of Way Cost</b>	Assuming project extends 2,000 sf beyond ROW	\$8,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$14,080	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$50,911	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$93,082</b>	

517 Westbridge Drive

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 1:**



**Photo 2:**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

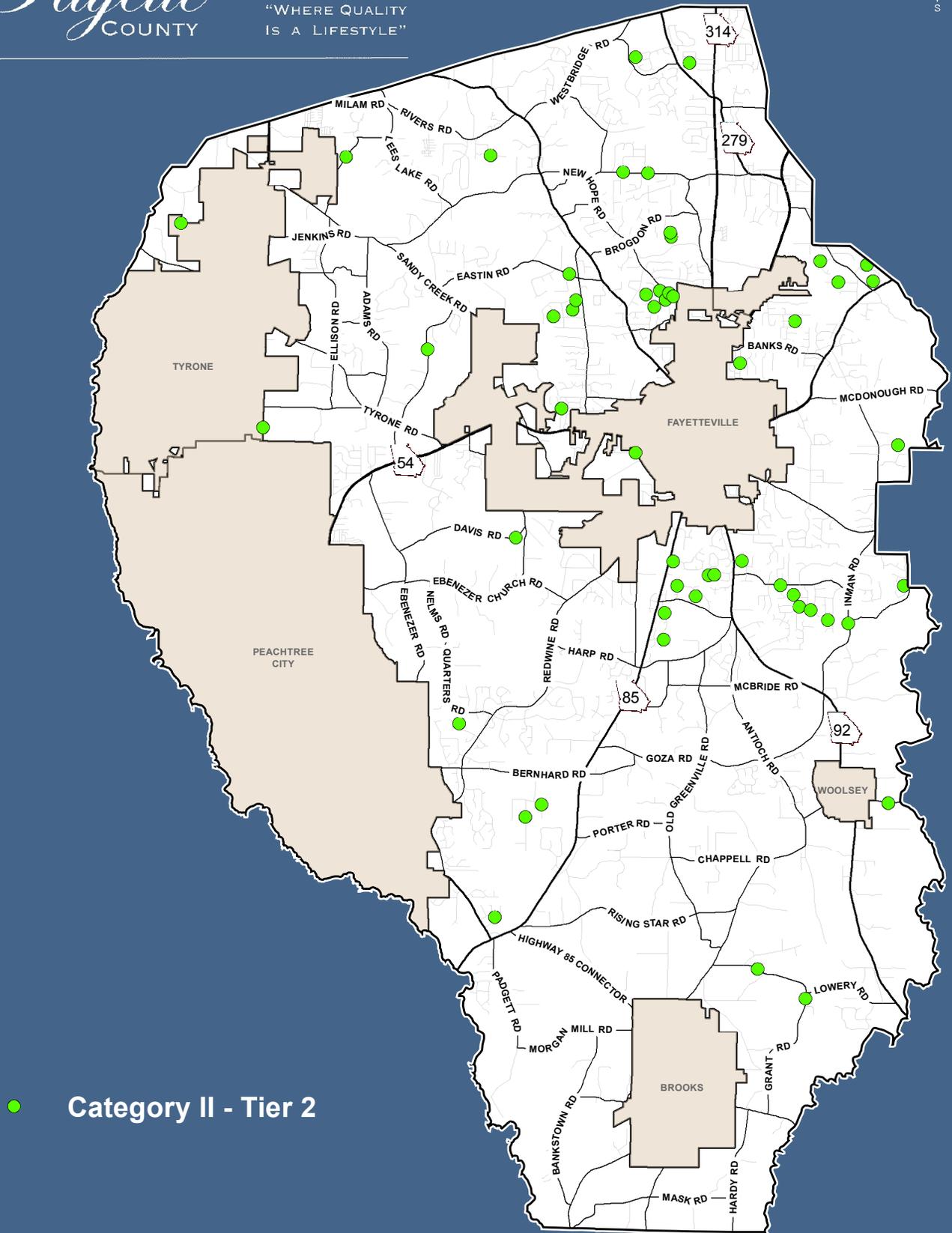
Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	168.00	\$ 941.70
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 2,124.90</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 1,812.24</b>
<b>Roadway Total</b>				<b>\$ 3,937.13</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	99.17	\$ 1,029.35
54" CMP (LF)	\$ 24.60		45.00	\$ 3,321.00
54" RCP		\$ 233.28	0.00	\$ -
Class A Conc (CY)		\$ 892.19	27.85	\$ 24,842.97
Steel (lb)		\$ 1.42	2,529.50	\$ 3,581.77
Pipe Bedding (CY)		\$ 48.60	12.20	\$ 592.92
Trench Backfill (CY)		\$ 2.99	93.09	\$ 278.16
Trench Compaction (CY)		\$ 6.36	74.47	\$ 473.65
<b>Drainage Total</b>				<b>\$ 34,119.83</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	16.33	\$ 71.74
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	180.00	\$ 762.48
Check Dam Type C Silt Fence (LF)		\$ 6.79	180.00	\$ 1,222.56
Erosion Control Mats (SY)		\$ 1.87	60.00	\$ 112.32
Landscape Mulch (SY)		\$ 3.58	60.00	\$ 214.56
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	18.67	\$ 1,138.37
Plastic Filter Fabric (SY)		\$ 5.72	18.67	\$ 106.85
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 3,628.87</b>
<b>Construction Cost Total</b>				<b>\$ 47,139.83</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 3,771.19</b>
<b>Construction Cost Grand Total</b>				<b>\$ 50,911.02</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	40.00	\$ 3,960.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	40.00	\$ 2,860.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	40.00	\$ 2,860.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	40.00	\$ 4,400.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 14,080.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	2,000.00	\$ 8,000.00	
<b>ROW Total</b>			<b>\$ 8,000.00</b>	





Fayette  
COUNTY

"WHERE QUALITY  
IS A LIFESTYLE"



● Category II - Tier 2



## CATEGORY II - TIER 2

PROJECT NAME	PROJECT DESCRIPTION	ESTIMATED COST
170 Angela Dr	2 X 30" RCP, 84'	\$59,084
165 North Bend Ct	2 x 42 " RCP, 272'	\$187,610
110 Branchwood Ct	48' RCP, 52'	\$58,323
140 Brandon Mill Cir - East	48", RCP, 500'	\$269,895
115 Brandon Mill Cir - North	48", RCP, 250'	\$187,332
225 Brandon Mill Cir - SW	8'x4' RBC, 175'	\$369,852
295 Brandon Mill Cir - West	48", RCP, 350'	\$230,615
115 Brockton Ct	60" RCP, 64'	\$105,739
223 Cedar Trl	48" RCP, 50'	\$58,206
Coastline Rd	trp 10'x8', 232'	\$539,571
171 County Line Ct	4'x3' RBC, 84'	\$116,051
178 Crabapple Ln	trp 8'x5' RBC, 70'	\$383,326
168 Cross Creek Trl	8'x5' RBC, 80'	\$562,174
130 Darren Dr	80' prestressed concrete beam bridg	\$383,630
118 Davis Rd	5 10'x4' RBC, 85'	\$871,871
308 Deauville Way	2 x 30 " RCP, 610 '	\$217,516
175 Deer Trl	36" RCP	\$88,923
161 Deerfield Ln	36" RCP, 64'	\$100,012
130 Deerfield Ln	36" RCP, 56'	\$98,924
325 Derby Dr	54" RCP, 75'	\$129,740
116 Downing Ct	4'x3' RBC, 45'	\$84,127
584 Flat Creek Trl	trp 10'x4' RBC, 70'	\$535,551
130 Greenfield Cir	5'x3' RBC, 45'	\$98,969
250 Greenfield Cir	2 x 42" RCP, 108'	\$100,073
165 Grandchester Way	60" RCP, 80'	\$159,475
250 Grant Rd	60" RCP, 48'	\$76,779
426 Grant Rd	60" RCP, 48'	\$76,779
226 Graves Rd	dbl 30" RCP, 70'	\$71,856
110 Gristmill Dr	6'x3' RBC, 80'	\$159,309
120 Heritage Way - North	48" RCP, 400"	\$240,898
160 Heritage Way - South	48" RCP, 200'	\$177,039
287 Hilo Rd	trp 24" RCP, 186'	\$69,108
448 Inman Rd	dbl 7' x 6' RBC, 77'	\$192,130
510 Janice Dr	dbl 6'x4' RBC, 70'	\$196,472
671 Kenwood Rd	60" RCP, 57'	\$96,178



## CATEGORY II - TIER 2

PROJECT NAME	PROJECT DESCRIPTION	ESTIMATED COST
547 Kenwood Rd	dbl 8'x5' RBC, 80'	\$229,611
200 Kingswood Dr	48" RCP, 92'	\$115,742
330 Merrydale Dr	60" RCP, 88'	\$110,280
110 Mark Ln	dbl 6'x4' RBC, 90'	\$249,037
130 Matthew Way	dbl 9'x4' RBC, 80'	\$322,809
145 Millers Oak Way	36" RCP, 322'	\$202,401
420 North Dr	5'x4' RBC, 80'	\$132,292
290 Oak St	42" RCP, 64'	\$66,563
220 Old Ivy	42" RCP, 142'	\$117,610
190 Ponderosa Dr	48" RCP, 40'	\$104,203
125 Ridge Brook Ct	48" RCP, 173'	\$159,342
545 Ridgemont Dr	36" RCP, 32 36" of HDPE, 260'	\$107,033
170 Ridge Way	48" RCP, 136'	\$228,742
Royal Ridge Way	dbl 8x5 RBC, 62'	\$214,176
120 Shoal Creek Rd	Trp 8' x 8'RBC, 184'	\$380,630
261 Trickum Creek Rd	trp 8' x 5' RBC, 70'	\$346,541
<b>Tier 2 Subtotal</b>		<b>\$10,440,149</b>
<b>2016 CATEGORY II TOTAL</b>		<b>\$14,145,522</b>



General Information		Map	
Project ID			
Street Name	170 Angela Drive		
Site Visit Date	1/20/2016		
Road Classification	Minor road		
Project Notes			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-11'		
Existing Shld Width (paved and grass) (feet)	4'		
Existing Side Slopes	4:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	3'		
Pipe Type and Size	CMPs 2x30"		
Pipe Condition (1-5) (1 is new)	4-5		
Condition Notes: Two corrugated metal pipes 1.8' apart. Both have rusted out bottoms. No headwall			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands			
Ditches	Roadside drainage ditches		
State Waters			
Utilities (Visual Inspection)			
Electric	Aerial		
Cable	Buried		
Phone	Aerial		
Gas	Unknown		
Water	Unknown		
Sewer	Unknown		
Other			
Proposed Design			
Roadway Section	Typical		
Culvert Size & Material	2x30" Round RCP with straight headwall		
Utility Relocations	Utility pole with electric and phone wires. Buried cable		
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% of Construction Cost and surveying needs	\$8,145	
Right of Way Cost	Project entirely in ROW	\$0	
Utility Relocation Cost		\$9,488	
Construction Cost		\$31,451	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$59,084</b>	





**Photo 1:** Upstream end of culverts looking southwest towards Angela Dr.



**Photo 2:** Downstream end of culverts

## Angela Drive

**Photo Date:**

1/20/2016

**Taken By:**

David Gibbs

**Page**

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$0.73	\$4.87	209.00	\$1,171.51
Curb and Gutter (LF)	\$28.56	\$30.60	0.00	\$0.00
Drain Inlet (EA)		\$3,000.00	0.00	\$0.00
4" Sidewalk (SY)	\$13.56	\$36.90	0.00	\$0.00
Guardrail (LF)	\$4.88	\$49.09	0.00	\$0.00
End Anchorage (EA)		\$1,380.00	0.00	\$0.00
<b>Subtotal</b>				<b>\$1,171.51</b>

Grading Complete (5% of Rwy Items & Drng Total \$) **\$1,051.07**

**Roadway Total \$2,222.58**

Drainage	Removal Unit Cost	\$2.00	Amount	Total Cost
Trench Excavation (CY)		\$10.38	100.63	\$1,044.54
30" CMP	\$19.62		88.00	\$1,726.56
30" RCP		\$105.60	88.00	\$9,292.80
Class A Conc (CY)		\$892.19	7.24	\$6,459.44
Steel (lb)		\$1.42	0.00	\$0.00
Pipe Bedding (CY)		\$48.60	15.48	\$752.40
Trench Backfill (CY)		\$2.99	71.08	\$212.40
Trench Compaction (CY)		\$6.36	56.87	\$361.68

**Drainage Total \$19,849.81**

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$0.71		\$0.00

**Signing and Marking Total \$0.00**

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$10,260.00	0.01	\$141.32
Temporary Pavement			\$0.00
Temporary Drainage (Stream Diversion)	\$4,428.00	1.00	\$4,428.00

**Staging Total \$4,569.32**

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$4.39	23.22	\$101.99
Temporary Grassing (AC)	\$855.60	0.00	\$0.00
Type C Silt Fence (LF)	\$4.24	176.00	\$745.54
Check Dam Type C Silt Fence (LF)	\$6.79	176.00	\$1,195.39
Erosion Control Mats (SY)	\$1.87	19.56	\$36.61
Landscape Mulch (SY)	\$3.58	0.00	\$0.00
Perm Grassing (AC)	\$1,402.20	0.00	\$0.00
Rip Rap Type 3 12" (SY)	\$60.98	6.00	\$365.90
Plastic Filter Fabric (SY)	\$5.72	6.00	\$34.34
4" Ditch Paving (SY)	\$54.65	0.00	\$0.00

**Erosion Control Total \$2,479.78**

**Construction Cost Total \$29,121.49**

**Traffic Control (8% of Construction Total \$) \$2,329.72**

**Construction Cost Grand Total \$31,451.21**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$11.00	\$55.00	50.00	\$3,300.00
Buried	\$16.50	\$82.50	0.00	\$0.00
Wooden Pole	\$82.50	\$605.00	1.00	\$687.50
Phone				
Aerial	\$11.00	\$27.50	50.00	\$1,925.00
Buried	\$16.50	\$55.00	0.00	\$0.00
Wooden Pole	\$82.50	\$605.00	0.00	\$0.00
Cable				
Aerial	\$11.00	\$27.50	0.00	\$0.00
Buried	\$16.50	\$55.00	50.00	\$3,575.00
Wooden Pole	\$82.50	\$605.00	0.00	\$0.00
Gas				
4" main	\$16.50	\$66.00	0.00	\$0.00
Water				
8" main	\$16.50	\$93.50	0.00	\$0.00
Sewer				
12" main	\$16.50	\$82.50	0.00	\$0.00
<b>Utility Relocation Total</b>				<b>\$9,487.50</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$4.00	0.00	\$0.00
<b>ROW Total</b>			<b>\$0.00</b>



General Information	
Project ID	
Street Name	165 North Bend Court
Site Visit Date	2/4/2016
Road Classification	Minor road

Project Notes	

**Field Notes**

**Design (Existing Site Features)**

Existing Road Laneage	2-11.5'
Existing Shld Width (paved and grass) (feet)	14'
Existing Side Slopes	3:1
Existing Guardrail	N/A
Depth fm Pavement to Top of Culvert (ft):	5'
Pipe Type and Size	42" CMP
Pipe Condition (1-5) (1 is new)	3-4

Condsirable rusting.

Pavement Type/Condition	Asphalt/Good
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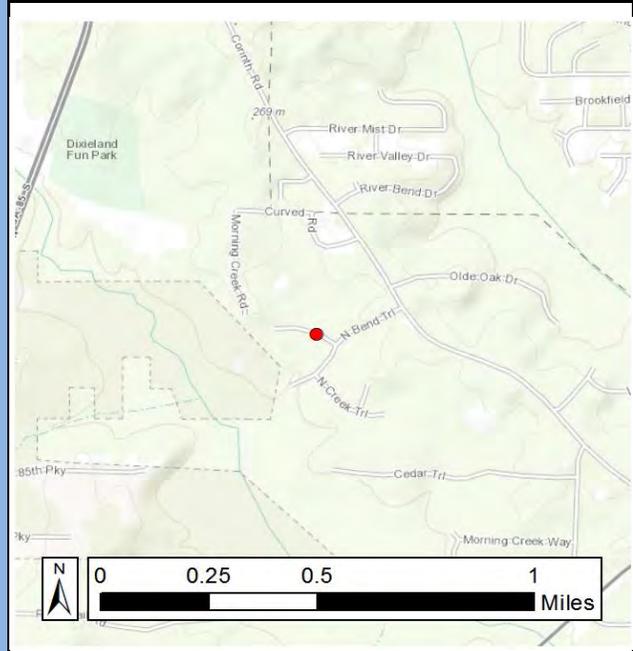
**Environmental Features**

Wetlands	
Ditches	
State Waters	

**Utilities (Visual Inspection)**

Electric	Aerial
Cable	Unknown
Phone	Aerial
Gas	Unknown
Water	Unknown
Sewer	Unknown
Other	Unknown

**Map**



**Stage Construction Options**

Close Location to Traffic	
Maintain One Lane - No Temp Pavement	X
Maintain One Lane - Temp Pavement	

**Stage Construction Notes:**

Roadsides are heavily brushed, staging area may need to be cleared.

**Proposed Design**

Roadway Section	Typical
Culvert Size & Material	2 x 42" round RCPs with straight headwalls.
Utility Relocations	Utility pole and hung wires, possible water main
Guardrail Replacement	
Miscellaneous Features	

**Planning Cost Estimate**

Type	Notes	Total
Design	Includes 10% Construction cost and surveying needs	\$16,011
Right of Way Cost	Assuming project extends beyond ROW, 1/5 acre	\$34,848
Utility Relocation Cost	Aerial phone and electric, utility pole, water main	\$16,638
Construction Cost		\$110,113
Environmental Permits	Assuming minimal environmental permitting required	\$10,000

<b>Total Planning Estimate</b>	<b>\$187,610</b>
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**Photo 1:** Upstream end of culvert looking South towards North Bend Court



**Photo 2:** Downstream looking South towards North Bend Court.

**North Bend Court**

**Photo Date:**

2/4/2016

**Taken By:**

Christian Helfrich

**Page**

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	276.00	\$ 1,547.07
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 9,913.47</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 4,296.91

Roadway Total \$ 14,210.38

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	472.22	\$ 4,901.67
42" CMP (LF)	\$ 24.60		176.00	\$ 12,988.80
42" RCP (LF)		\$ 142.52	272.00	\$ 38,766.53
Class A Conc (CY)		\$ 892.19	14.66	\$ 13,079.48
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	62.96	\$ 3,060.00
Trench Backfill (CY)		\$ 2.99	399.72	\$ 1,194.38
Trench Compaction (CY)		\$ 6.36	319.78	\$ 2,033.80

Drainage Total \$ 76,024.64

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.25	\$ 2,565.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 6,993.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	150.67	\$ 661.73
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	272.00	\$ 1,152.19
Check Dam Type C Silt Fence (LF)	\$ 6.79	272.00	\$ 1,847.42
Erosion Control Mats (SY)	\$ 1.87	0.00	\$ -
Landscape Mulch (SY)	\$ 3.58	0.00	\$ -
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	16.00	\$ 975.74
Plastic Filter Fabric (SY)	\$ 5.72	16.00	\$ 91.58
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 4,728.67

Construction Cost Total \$ 101,956.69

Traffic Control (8% of Construction Total \$) \$ 8,156.54

Construction Cost Grand Total \$ 110,113.23

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	100.00	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 16,637.50</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	8712.00	\$ 34,848.00
<b>ROW Total</b>			<b>\$ 34,848.00</b>



General Information		Map	
Project ID			
Street Name	110 Branchwood Ct		
Site Visit Date	1/20/2016		
Road Classification	Minor road		
Project Notes			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)	6.5'		
Existing Side Slopes	1:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	5.25'-6'		
Pipe Type and Size	48" CMP		
Pipe Condition (1-5) (1 is new)	4-5		
Condition Notes: Rusted out bottom. No headwall.			
Pavement Type/Condition	Asphalt/Good		
Environmental Features		<b>Stage Construction Options</b>	
Wetlands		Close Location to Traffic	
Ditches	Drainage ditches upstream side	Maintain One Lane - No Temp Pavement	X
State Waters		Maintain One Lane - Temp Pavement	
		Stage Construction Notes:	
Utilities (Visual Inspection)			
Electric	Aerial		
Cable	Unknown		
Phone	Aerial		
Gas	Unknown		
Water	Unknown		
Sewer			
Other			
Proposed Design			
Roadway Section	Typical		
Culvert Size & Material	48" round RCP with straight headwall		
Utility Relocations			
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% of Construction Cost and surveying needs	\$8,938	
Right of Way Cost	Project entirely in ROW	\$0	
Utility Relocation Cost	None identified	\$0	
Construction Cost		\$39,384	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$58,323</b>	





**Photo 1:**  
Upstream end of culvert.



**Photo 2:** Downstream end of culvert looking northeast towards Branchwood Ct.

**Branchwood Court**

**Photo Date:**

1/20/2016

**Taken By:**

David Gibbs

**Page**

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	144.00	\$ 807.17
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 807.17</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 1,366.93</b>
<b>Roadway Total</b>				<b>\$ 2,174.10</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	138.67	\$ 1,439.36
48" CMP (LF)	\$ 24.60		52.00	\$ 1,279.20
48" RCP (LF)		\$ 193.20	52.00	\$ 10,046.40
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	11.56	\$ 561.60
Trench Backfill (CY)		\$ 2.99	121.58	\$ 363.27
Trench Compaction (CY)		\$ 6.36	97.26	\$ 618.58
<b>Drainage Total</b>				<b>\$ 26,531.38</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71		\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.04	\$ 423.97
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 4,851.97</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	18.67	\$ 81.98
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	208.00	\$ 881.09
Check Dam Type C Silt Fence (LF)		\$ 6.79	208.00	\$ 1,412.74
Erosion Control Mats (SY)		\$ 1.87	0.00	\$ -
Landscape Mulch (SY)		\$ 3.58	0.00	\$ -
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	8.00	\$ 487.87
Plastic Filter Fabric (SY)		\$ 5.72	8.00	\$ 45.79
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 2,909.47</b>
<b>Construction Cost Total</b>				<b>\$ 36,466.92</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 2,917.35</b>
<b>Construction Cost Grand Total</b>				<b>\$ 39,384.27</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ -</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	0.00	\$ -
<b>ROW Total</b>				<b>\$ -</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	Brandon Mill Cir - West		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Urban typical section with valley gutter.			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-10'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4		
<b>Existing Side Slopes</b>	flat		
<b>Existing Guardrail</b>	none		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	4		
<b>Pipe Type and Size</b>	48" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>	Typical		
<b>Culvert Size &amp; Material</b>	48", RCP, 350' length		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$19,474	
<b>Right of Way Cost</b>	Assuming project extends 7,500 sf beyond ROW	\$30,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$26,400	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$144,741	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$230,615</b>	



**Photo 1:**



**Photo 2:**

Brandon Mill Cir - West

**Photo Date:**

7/2/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	120	\$ 672.64
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00		\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90		\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
Subtotal				\$ 1,855.84
Grading Complete (5% of Rwy Items & Drng Total \$)				\$ 5,597.18
Roadway Total				\$ 7,453.02
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	972	\$ 10,091.67
48" CMP (LF)	\$ 24.60		350	\$ 8,610.00
48" RCP (LF)		\$ 193.20	350	\$ 67,620.00
Class A Conc (CY)		\$ 892.19	14	\$ 12,222.98
Steel (lb)		\$ 1.42	0	\$ -
Pipe Bedding (CY)		\$ 48.60	78	\$ 3,780.00
Trench Backfill (CY)		\$ 2.99	961	\$ 2,872.27
Trench Compaction (CY)		\$ 6.36	769	\$ 4,890.94
Drainage Total				\$ 110,087.85
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0	\$ -
Signing and Marking Total				\$ -
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1	\$ 4,428.00
Staging Total				\$ 5,454.00
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	220	\$ 966.24
Temporary Grassing (AC)		\$ 855.60	0	\$ -
Type C Silt Fence (LF)		\$ 4.24	700	\$ 2,965.20
Check Dam Type C Silt Fence (LF)		\$ 6.79	700	\$ 4,754.40
Erosion Control Mats (SY)		\$ 1.87	233	\$ 436.80
Landscape Mulch (SY)		\$ 3.58	233	\$ 834.40
Perm Grassing (AC)		\$ 1,402.20	0	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	16	\$ 975.74
Plastic Filter Fabric (SY)		\$ 5.72	16	\$ 91.58
4" Ditch Paving (SY)		\$ 54.65	0	\$ -
Erosion Control Total				\$ 11,024.37
Construction Cost Total				\$ 134,019.25
Traffic Control (8% of Construction Total \$)				\$ 10,721.54
Construction Cost Grand Total				\$ 144,740.79
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	75	\$ 7,425.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	75	\$ 8,250.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0	\$ -
12" main	\$ 16.50	\$ 82.50	0	\$ -
Utility Relocation Total				\$ 26,400.00
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	7,500	\$ 30,000.00
ROW Total				\$ 30,000.00



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>Brandon Mill Cir - North</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Urban typical section with valley gutter,			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-10'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4		
<b>Existing Side Slopes</b>	flat		
<b>Existing Guardrail</b>	none		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	4		
<b>Pipe Type and Size</b>	48" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	48", RCP, 250' length		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$15,539	
<b>Right of Way Cost</b>	Assuming 7,500 sf outside of ROW	\$30,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$26,400	
<b>Construction Cost</b>	Applying 1/10 acre clearing and grubbing cost	\$105,392	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$187,332</b>	



**Photo 1:**



**Photo 2:**

Brandon Mill Cir - North

**Photo Date:**

7/2/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	120.00	\$ 672.64
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00		\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90		\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
<b>Subtotal</b>				<b>\$ 1,855.84</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 3,998.51

Roadway Total \$ 5,854.35

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	500.00	\$ 5,190.00
48" CMP (LF)	\$ 24.60		250.00	\$ 6,150.00
48" RCP (LF)		\$ 193.20	250.00	\$ 48,300.00
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	55.56	\$ 2,700.00
Trench Backfill (CY)		\$ 2.99	439.76	\$ 1,313.99
Trench Compaction (CY)		\$ 6.36	351.80	\$ 2,237.48

Drainage Total \$ 78,114.44

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,454.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	153.33	\$ 673.44
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	500.00	\$ 2,118.00
Check Dam Type C Silt Fence (LF)	\$ 6.79	500.00	\$ 3,396.00
Erosion Control Mats (SY)	\$ 1.87	166.67	\$ 312.00
Landscape Mulch (SY)	\$ 3.58	166.67	\$ 596.00
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	16.00	\$ 975.74
Plastic Filter Fabric (SY)	\$ 5.72	16.00	\$ 91.58
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 8,162.77

Construction Cost Total \$ 97,585.57

Traffic Control (8% of Construction Total \$) \$ 7,806.85

Construction Cost Grand Total \$ 105,392.41

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	75.00	\$ 7,425.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	75.00	\$ 8,250.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 26,400.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	7,500.00	\$ 30,000.00
<b>ROW Total</b>			<b>\$ 30,000.00</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>Brandon Mill Cir - East</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Urban typical section with valley gutter,			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-10'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4		
<b>Existing Side Slopes</b>	flat		
<b>Existing Guardrail</b>	none		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	4		
<b>Pipe Type and Size</b>	48" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	48", RCP, 500' length		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$23,045	
<b>Right of Way Cost</b>	Assuming 7,500 sf outside of ROW	\$30,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$26,400	
<b>Construction Cost</b>	Applying 1/10 acre clearing and grubbing cost	\$180,450	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$269,895</b>	



**Photo 1:**



**Photo 2:**

Brandon Mill Cir - East

**Photo Date:**

7/2/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	120.00	\$ 672.64
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00		\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90		\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
Subtotal				\$ 1,855.84
Grading Complete (5% of Rwy Items & Drng Total \$)				\$ 7,298.47
Roadway Total				\$ 9,154.31
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	1,000.00	\$ 10,380.00
48" CMP (LF)	\$ 24.60		500.00	\$ 12,300.00
48" RCP (LF)		\$ 193.20	500.00	\$ 96,600.00
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	111.11	\$ 5,400.00
Trench Backfill (CY)		\$ 2.99	892.84	\$ 2,667.82
Trench Compaction (CY)		\$ 6.36	714.28	\$ 4,542.80
Drainage Total				\$ 144,113.59
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
Signing and Marking Total				\$ -
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
Staging Total				\$ 5,454.00
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	320.00	\$ 1,405.44
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	500.00	\$ 2,118.00
Check Dam Type C Silt Fence (LF)		\$ 6.79	500.00	\$ 3,396.00
Erosion Control Mats (SY)		\$ 1.87	166.67	\$ 312.00
Landscape Mulch (SY)		\$ 3.58	166.67	\$ 596.00
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	8.00	\$ 487.87
Plastic Filter Fabric (SY)		\$ 5.72	8.00	\$ 45.79
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
Erosion Control Total				\$ 8,361.10
Construction Cost Total				\$ 167,083.01
Traffic Control (8% of Construction Total \$)				\$ 13,366.64
Construction Cost Grand Total				\$ 180,449.65
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	75.00	\$ 7,425.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	75.00	\$ 8,250.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
Utility Relocation Total				\$ 26,400.00
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	7,500.00	\$ 30,000.00	
ROW Total			\$ 30,000.00	



General Information		Map	
Project ID			
Street Name	Brandon Mill Cir - SW		
Site Visit Date	5/22/13		
Road Classification	Minor road		
<b>Project Notes</b>			
Urban typical section with valley gutter,			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
Existing Road Laneage	2-10'		
Existing Shld Width (paved and grass) (feet)	4		
Existing Side Slopes	flat		
Existing Guardrail	none		
Depth fm Pavement to Top of Culvert (ft):	4		
Pipe Type and Size	60" CMP		
Pipe Condition (1-5) (1 is new)	3		
Condition Notes: no headwall upstream or down			
Pavement Type/Condition	Asphalt/Good		
<b>Environmental Features</b>		<b>Stage Construction Options</b>	
Wetlands	None	Close Location to Traffic	X
Ditches	None	Maintain One Lane - No Temp Pavement	
		Maintain One Lane - Temp Pavement	
		Stage Construction Notes: Close roadway;	
<b>Utilities (Visual Inspection)</b>			
Electric	Buried		
Cable	Buried		
Phone	Buried		
Gas			
Water	Buried		
Sewer			
Other			
<b>Proposed Design</b>			
Roadway Section			
Culvert Size & Material	8' x 4' box, concrete, 175' length		
Utility Relocations	Electric, cable, phone, water		
Guardrail Replacement			
Miscellaneous Features			
<b>Planning Cost Estimate</b>			
Type	Notes	Total	
System Evaluation		\$25,000	
Design	Includes 10% Construction Cost and surveying needs	\$29,859	
Right of Way Cost	Assuming project extends 7,500 sf beyond ROW	\$30,000	
Utility Relocation Cost	Buried utilities	\$26,400	
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$248,592	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$369,852</b>	



**Photo 1:**



**Photo 2:**

Brandon Mill Cir - Southwest

**Photo Date:**

7/2/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	200.00	\$ 1,121.07
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 2,304.27</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 10,148.25

Roadway Total \$ 12,452.51

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	648.15	\$ 6,727.78
60" CMP (LF)	\$ 24.60		175.00	\$ 12,915.00
60" RCP (LF)		\$ 259.20	0.00	\$ -
Class A Conc (CY)		\$ 892.19	162.36	\$ 144,851.18
Steel (lb)		\$ 1.42	19,170.00	\$ 27,144.72
Pipe Bedding (CY)		\$ 48.60	65.60	\$ 3,188.16
Trench Backfill (CY)		\$ 2.99	722.36	\$ 2,158.42
Trench Compaction (CY)		\$ 6.36	577.89	\$ 3,675.38

Drainage Total \$ 200,660.64

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	40.00	\$ 28.32

Signing and Marking Total \$ 28.32

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,510.64

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	172.22	\$ 756.40
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	700.00	\$ 2,965.20
Check Dam Type C Silt Fence (LF)	\$ 6.79	700.00	\$ 4,754.40
Erosion Control Mats (SY)	\$ 1.87	233.33	\$ 436.80
Landscape Mulch (SY)	\$ 3.58	233.33	\$ 834.40
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	26.67	\$ 1,626.24
Plastic Filter Fabric (SY)	\$ 5.72	26.67	\$ 152.64
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 11,526.08

Construction Cost Total \$ 230,178.20

Traffic Control (8% of Construction Total \$) \$ 18,414.26

Construction Cost Grand Total \$ 248,592.45

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	75.00	\$ 7,425.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	75.00	\$ 8,250.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 26,400.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	7,500.00	\$ 30,000.00
<b>ROW Total</b>			<b>\$ 30,000.00</b>



General Information		Map	
Project ID			
Street Name	115 Brockton Ct		
Site Visit Date	1/20/2016		
Road Classification	Minor road		
Project Notes			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-10.5'		
Existing Shld Width (paved and grass) (feet)	15'		
Existing Side Slopes	1.5:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	4'		
Pipe Type and Size	60" CMP		
Pipe Condition (1-5) (1 is new)	3-4		
Condition Notes: Rusted out bottom. Concrete headwall. Undercutting at upstream end. Existing blowout at storm drain inlet 1' x 1'			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands			
Ditches			
State Waters			
Utilities (Visual Inspection)			
Electric	Aerial		
Cable	Buried		
Phone	Aerial		
Gas	Unknown		
Water	Unknown		
Sewer			
Other	Curb and gutter		
Stage Construction Options			
Close Location to Traffic			
Maintain One Lane - No Temp Pavement		X	
Maintain One Lane - Temp Pavement			
Stage Construction Notes:			
Proposed Design			
Roadway Section	Typical		
Culvert Size & Material	60" round RCP with straight headwall		
Utility Relocations	Removal/replacement drain inlets, buried cable		
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	10% of Construction Cost and any surveying needed	\$11,876	
Right of Way Cost	Assuming downstream end extends past ROW 1/20 acre	\$8,712	
Utility Relocation Cost		\$6,388	
Construction Cost		\$68,763	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$105,739</b>	



**Photo 1:** Upstream end of culvert.



**Photo 2:** Downstream end of culvert looking northeast towards Brockton Court.

**Brockton Court**

**Photo Date:**

1/20/2016

**Taken By:**

David Gibbs

**Page**

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	154.00	\$ 863.22
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 9,229.62</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 2,601.85</b>
<b>Roadway Total</b>				<b>\$ 11,831.47</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	154.00	\$ 1,598.52
60" CMP (LF)	\$ 24.60		66.00	\$ 1,623.60
60" RCP (LF)		\$ 281.96	66.00	\$ 18,609.62
Class A Conc (CY)		\$ 892.19	21.58	\$ 19,253.42
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	17.11	\$ 831.60
Trench Backfill (CY)		\$ 2.99	110.28	\$ 329.52
Trench Compaction (CY)		\$ 6.36	88.22	\$ 561.11
<b>Drainage Total</b>				<b>\$ 42,807.39</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71		\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.09	\$ 918.60
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,346.60</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	34.22	\$ 150.30
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	264.00	\$ 1,118.30
Check Dam Type C Silt Fence (LF)		\$ 6.79	264.00	\$ 1,793.09
Erosion Control Mats (SY)		\$ 1.87	0.00	\$ -
Landscape Mulch (SY)		\$ 3.58	0.00	\$ -
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	9.33	\$ 569.18
Plastic Filter Fabric (SY)		\$ 5.72	9.33	\$ 53.42
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 3,684.30</b>
<b>Construction Cost Total</b>				<b>\$ 63,669.76</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 5,093.58</b>
<b>Construction Cost Grand Total</b>				<b>\$ 68,763.34</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Drain inlet		\$ 1,406.40	2.00	\$ 2,812.80
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 6,387.80</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	2178.00	\$ 8,712.00
<b>ROW Total</b>				<b>\$ 8,712.00</b>



General Information		Map	
Project ID			
Street Name	223 Cedar Trail		
Site Visit Date	1/21/2016		
Road Classification	Minor road		
Project Notes			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-13'		
Existing Shld Width (paved and grass) (feet)	1'		
Existing Side Slopes	2:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	4'		
Pipe Type and Size	48" CMP		
Pipe Condition (1-5) (1 is new)	4-5		
Condition Notes: Rusted out bottoms, no headwalls. Streambed blowout on downstream side			
Pavement Type/Condition	Asphalt/Good		
Environmental Features		Stage Construction Options	
Wetlands		Close Location to Traffic	
Ditches	Roadside drainage ditches	Maintain One Lane - No Temp Pavement	X
State Waters		Maintain One Lane - Temp Pavement	
Utilities (Visual Inspection)		Stage Construction Notes:	
Electric	Unknown		
Cable	Unknown		
Phone	Unknown		
Gas	Unknown		
Water	Unknown		
Sewer			
Other			
Proposed Design			
Roadway Section	Typical		
Culvert Size & Material	48" round RCP with straight headwall		
Utility Relocations			
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% of Construction Cost and surveying needs	\$8,928	
Right of Way Cost	Project entirely in ROW	\$0	
Utility Relocation Cost	None identified	\$0	
Construction Cost		\$39,279	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$58,206</b>	



**Photo 1:** Upstream end of culvert.



**Photo 2:** Downstream end of culvert looking North towards Cedar Trail.

## Cedar Trail

**Photo Date:**

1/21/2016

**Taken By:**

David Gibbs

**Page**

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Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	156.00	\$ 874.43
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
Subtotal				\$ 874.43

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 1,346.09

Roadway Total \$ 2,220.52

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	115.56	\$ 1,199.47
48" CMP (LF)	\$ 24.60		52.00	\$ 1,279.20
48" RCP (LF)		\$ 193.20	52.00	\$ 10,046.40
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	11.56	\$ 561.60
Trench Backfill (CY)		\$ 2.99	91.35	\$ 272.96
Trench Compaction (CY)		\$ 6.36	73.08	\$ 464.81

Drainage Total \$ 26,047.41

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71		\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.08	\$ 769.50
Temporary Pavement			0
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,197.50

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	17.33	\$ 76.13
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	208.00	\$ 881.09
Check Dam Type C Silt Fence (LF)	\$ 6.79	208.00	\$ 1,412.74
Erosion Control Mats (SY)	\$ 1.87	0.00	\$ -
Landscape Mulch (SY)	\$ 3.58	0.00	\$ -
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	8.00	\$ 487.87
Plastic Filter Fabric (SY)	\$ 5.72	8.00	\$ 45.79
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 2,903.62

Construction Cost Total \$ 36,369.05

Traffic Control (8% of Construction Total \$) \$ 2,909.52

Construction Cost Grand Total \$ 39,278.58

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
<b>Electric</b>				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
<b>Phone</b>				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
<b>Cable</b>				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
<b>Gas</b>				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
<b>Water</b>				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
<b>Sewer</b>				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
Utility Relocation Total				\$ -

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	\$ -	\$ -
ROW Total			\$ -



General Information		Map	
Project ID			
Street Name	Coastline Road		
Site Visit Date	5/8/13		
Road Classification	Minor arterial		
Project Notes			
Rural Typical Section; Fish noted in stream/wetland			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)	6' Grass		
Existing Side Slopes	2:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	3		
Pipe Type and Size	5-96" CMP		
Pipe Condition (1-5) (1 is new)	4		
Condition Notes:			
Pavement Type/Condition	Asphalt/Good		
Environmental Features		Stage Construction Options	
Wetlands	Yes	Close Location to Traffic	X
Ditches	Yes	Maintain One Lane - No Temp Pavement	
		Maintain One Lane - Temp Pavement	
Utilities (Visual Inspection)		Stage Construction Notes:	
Electric	Aerial	Relocate if road cannot be closed	
Cable	None		
Phone	Aerial		
Gas	None		
Water	None		
Sewer	None		
Other			
Proposed Design			
Roadway Section			
Proposed Design	Triple 10' x 8' box culvert		
Utility Relocations	Electric, phone		
Guardrail Replacement	Need to add guardrail due to sideslopes and culvert installation		
Miscellaneous Features	Zone AE with Floodway, Floodplain Analysis Required		
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$67,431	
Right of Way Cost	Assuming project extends 4,500 sf beyond ROW	\$18,000	
Utility Relocation Cost	Utility poles and aerial phone wires	\$11,825	
Construction Cost	1/2 acre clearing and grubbing, Guardrails	\$424,314	
Environmental Permits	Permits, Zone AE Floodway Analysis	\$18,000	
<b>Total Planning Estimate</b>		<b>\$539,571</b>	



**Photo 1:**



**Photo 2:**

Coastline Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Coastline Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1,536.00	\$ 8,609.79
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	140.00	\$ 7,556.64
End Anchorage (EA)		\$ 1,380.00	4.00	\$ 5,520.00
<b>Subtotal</b>				<b>\$ 21,686.43</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 16,929.86

Roadway Total \$ 38,616.29

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	888.89	\$ 9,226.67
96" CMP (LF)	\$ 63.00		300.00	\$ 56,700.00
96" RCP		\$ 455.00	0.00	\$ -
Class A Conc (CY)		\$ 892.19	232.11	\$ 207,085.76
Steel (lb)		\$ 1.42	23,875.00	\$ 33,807.00
Pipe Bedding (CY)		\$ 48.60	61.60	\$ 2,993.76
Trench Backfill (CY)		\$ 2.99	878.84	\$ 2,625.99
Trench Compaction (CY)		\$ 6.36	703.08	\$ 4,471.56

Drainage Total \$ 316,910.73

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.50	\$ 5,130.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	3.00	\$ 13,284.00

Staging Total \$ 18,414.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	92.44	\$ 406.02
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	1,000.00	\$ 4,236.00
Check Dam Type C Silt Fence (LF)	\$ 6.79	1,000.00	\$ 6,792.00
Erosion Control Mats (SY)	\$ 1.87	333.33	\$ 624.00
Landscape Mulch (SY)	\$ 3.58	333.33	\$ 1,192.00
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	85.33	\$ 5,203.97
Plastic Filter Fabric (SY)	\$ 5.72	85.33	\$ 488.45
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 18,942.43

Construction Cost Total \$ 392,883.45

Traffic Control (8% of Construction Total \$) \$ 31,430.68

Construction Cost Grand Total \$ 424,314.13

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	100.00	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Phone				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 11,825.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	4,500.00	\$ 18,000.00
<b>ROW Total</b>			<b>\$ 18,000.00</b>

General Information		Map
<b>Project ID</b>		
<b>Street Name</b>	171 County Line Court	
<b>Site Visit Date</b>	2/4/2016	
<b>Road Classification</b>	Minor road	
<b>Project Notes</b>		
Existing culvert starts as 42" CMP parallel to road for 15', takes almost 90 degree turn under road and switches to a 30" CMP where it drains on the other side. Proposed design is one straight pipe		
<b>Field Notes</b>		
<b>Design (Existing Site Features)</b>		
<b>Existing Road Laneage</b>	2-11	
<b>Existing Shld Width (paved and grass) (feet)</b>	18'	
<b>Existing Side Slopes</b>	1:9	
<b>Existing Guardrail</b>	N/A	
<b>Depth fm Pavement to Top of Culvert (ft):</b>	2.5'	
<b>Pipe Type and Size</b>	42" to 30" CMP	
<b>Pipe Condition (1-5) (1 is new)</b>	3-4	
Rusted but in tact.		
<b>Pavement Type/Condition</b>	Asphalt/Good	
<b>Environmental Features</b>		
<b>Wetlands</b>		
<b>Ditches</b>		
<b>State Waters</b>		
<b>Utilities (Visual Inspection)</b>		
<b>Electric</b>	Buried	
<b>Cable</b>	Buried	
<b>Phone</b>	Unknown	
<b>Gas</b>	Unknown	
<b>Water</b>	Unknown	
<b>Sewer</b>	Unknown	
<b>Other</b>	Unknown	
<b>Proposed Design</b>		
<b>Roadway Section</b>	Typical	
<b>Culvert Size &amp; Material</b>	4' x 3' concrete box culvert with wingwalls. Existing drainageway alongside road before culvert inlet will be extended, near 90 degree pipe turn will be eliminated. Proposed pipe will run perpendicular to the road.	
<b>Utility Relocations</b>	Utility pole on top of upstream inlet will need relocating along with aerial wires and an exposed electrical wire on the ground across the pipe face.	
<b>Guardrail Replacement</b>		
<b>Miscellaneous Features</b>		
<b>Planning Cost Estimate</b>		
<b>Type</b>	<b>Notes</b>	<b>Total</b>
<b>Design</b>	Includes 10% Construction cost and surveying needs	\$11,140
<b>Right of Way Cost</b>	Assuming project extends beyond ROW, 1/10 acre	\$17,424
<b>Utility Relocation Cost</b>	Utility pole, aerial electric and cable wire, buried wire	\$16,088
<b>Construction Cost</b>		\$61,400
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000
<b>Total Planning Estimate</b>		<b>\$116,051</b>



**Photo 1:** Upstream end of culvert looking East along County Line Court.



**Photo 2:** Downstream end looking North towards County Line Court.

**County Line Court**

**Photo Date:**

2/4/2016

**Taken By:**

Christian Helfrich

**Page**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	132.00	\$ 739.90
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	24.00	\$ 1,295.42
End Anchorage (EA)		\$ 1,380.00	4.00	\$ 5,520.00
<b>Subtotal</b>				<b>\$ 7,555.33</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 2,339.25

Roadway Total \$ 9,894.58

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	100.00	\$ 1,038.00
42" CMP (LF)	\$ 24.60		85.00	\$ 6,273.00
84" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	29.93	\$ 26,703.19
Steel (lb)		\$ 1.42	2659.00	\$ 3,765.14
Pipe Bedding (CY)		\$ 48.60	13.80	\$ 670.68
Trench Backfill (CY)		\$ 2.99	96.53	\$ 288.44
Trench Compaction (CY)		\$ 6.36	77.23	\$ 491.16

Drainage Total \$ 39,229.61

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	24.00	\$ 16.99

Signing and Marking Total \$ 16.99

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.05	\$ 513.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 4,974.98

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	200.00	\$ 878.40
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	120.00	\$ 508.32
Check Dam Type C Silt Fence (LF)	\$ 6.79	120.00	\$ 815.04
Erosion Control Mats (SY)	\$ 1.87	0.00	\$ -
Landscape Mulch (SY)	\$ 3.58	0.00	\$ -
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	8.00	\$ 487.87
Plastic Filter Fabric (SY)	\$ 5.72	8.00	\$ 45.79
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 2,735.42

Construction Cost Total \$ 56,851.59

Traffic Control (8% of Construction Total \$) \$ 4,548.13

Construction Cost Grand Total \$ 61,399.72

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	100.00	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 16,087.50</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	4356.00	\$ 17,424.00
<b>ROW Total</b>			<b>\$ 17,424.00</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>178 Crabapple Lane</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor arterial		
<b>Project Notes</b>			
Rural Typical Section			
<b>Field Notes</b>		<b>Stage Construction Options</b>	
<b>Design (Existing Site Features)</b>		<b>Close Location to Traffic</b>	X
<b>Existing Road Laneage</b>	2 - 9'-10'	<b>Maintain One Lane - No Temp Pavement</b>	
<b>Existing Shld Width (paved and grass) (feet)</b>	None	<b>Maintain One Lane - Temp Pavement</b>	
<b>Existing Side Slopes</b>	1.5:1 to flat	Stage Construction Notes:	
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	1.5' - 2'		
<b>Pipe Type and Size</b>	2 - 72" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3		
Condition Notes: No Headwall			
<b>Pavement Type/Condition</b>	Gravel/Fair		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Aerial		
<b>Cable</b>	Aerial		
<b>Phone</b>	Aerial		
<b>Gas</b>			
<b>Water</b>			
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	tpl 8' x 5' box, concrete, 70' length		
<b>Utility Relocations</b>	Electric, cable, phone		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>	Zone A, Floodplain Analysis Required		
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$42,332	
<b>Right of Way Cost</b>	Assuming project extends 3,000 sf beyond ROW	\$12,000	
<b>Utility Relocation Cost</b>	Aerial utilities	\$15,675	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$298,319	
<b>Environmental Permits</b>	Permits, Zone A Floodplain Analysis	\$15,000	
<b>Total Planning Estimate</b>		<b>\$383,326</b>	



**Photo 1:**



**Photo 2:**

Crabapple Lane

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Crabapple Lane

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	624.00	\$ 3,497.73
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 3,497.73</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 11,931.25</b>
<b>Roadway Total</b>				<b>\$ 15,428.98</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	539.26	\$ 5,597.51
72" CMP (LF)	\$ 63.00		140.00	\$ 26,460.00
84" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	185.48	\$ 165,483.03
Steel (lb)		\$ 1.42	21,112.00	\$ 29,894.59
Pipe Bedding (CY)		\$ 48.60	69.30	\$ 3,367.98
Trench Backfill (CY)		\$ 2.99	535.44	\$ 1,599.90
Trench Compaction (CY)		\$ 6.36	428.35	\$ 2,724.32
<b>Drainage Total</b>				<b>\$ 235,127.33</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Gravel Road (SY)		\$ 15.42	69.33	\$ 1,069.12
Temporary Drainage (Stream Diversion)		\$ 4,428.00	2.00	\$ 8,856.00
<b>Staging Total</b>				<b>\$ 10,951.12</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	132.89	\$ 583.65
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	560.00	\$ 2,372.16
Check Dam Type C Silt Fence (LF)		\$ 6.79	560.00	\$ 3,803.52
Erosion Control Mats (SY)		\$ 1.87	186.67	\$ 349.44
Landscape Mulch (SY)		\$ 3.58	186.67	\$ 667.52
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	104.00	\$ 6,342.34
Plastic Filter Fabric (SY)		\$ 5.72	104.00	\$ 595.30
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 14,713.92</b>
<b>Construction Cost Total</b>				<b>\$ 276,221.35</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 22,097.71</b>
<b>Construction Cost Grand Total</b>				<b>\$ 298,319.06</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	100.00	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Phone				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 15,675.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	3,000.00	\$ 12,000.00	
<b>ROW Total</b>			<b>\$ 12,000.00</b>	

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>Cross Creek Trail</b>		
<b>Site Visit Date</b>	5/21/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Rural Typical Section			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2 - 12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4' (Grass)		
<b>Existing Side Slopes</b>	6:1		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	3		
<b>Pipe Type and Size</b>	4 - 72" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Aerial		
<b>Cable</b>	Aerial		
<b>Phone</b>	Aerial		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>	In kind replace. For costing purposes, temporary road consists of 8" gravel fill		
<b>Culvert Size &amp; Material</b>	quad 8' x 5' box, concrete, 80' length		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$58,870	
<b>Right of Way Cost</b>	Assuming project extends 3,000 sf beyond ROW	\$12,000	
<b>Utility Relocation Cost</b>	Aerial utilities	\$17,600	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$463,704	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$562,174</b>	

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	912.00	\$ 5,112.06
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
Subtotal				\$ 5,112.06
Grading Complete (5% of Rwy Items & Drng Total \$)				\$ 19,033.58
Roadway Total				\$ 24,145.65
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	1,013.33	\$ 10,518.40
72" CMP (LF)	\$ 63.00		320.00	\$ 60,480.00
84" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	278.58	\$ 248,545.73
Steel (lb)		\$ 1.42	29,610.00	\$ 41,927.76
Pipe Bedding (CY)		\$ 48.60	115.40	\$ 5,608.44
Trench Backfill (CY)		\$ 2.99	1,049.93	\$ 3,137.20
Trench Compaction (CY)		\$ 6.36	839.95	\$ 5,342.06
Drainage Total				\$ 375,559.59
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	152.00	\$ 107.62
Signing and Marking Total				\$ 107.62
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Gravel Road (SY)		\$ 15.42	222.22	\$ 3,426.67
Temporary Drainage (Stream Diversion)		\$ 4,428.00	2.00	\$ 8,856.00
Staging Total				\$ 13,523.90
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	236.44	\$ 1,038.46
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	640.00	\$ 2,711.04
Check Dam Type C Silt Fence (LF)		\$ 6.79	640.00	\$ 4,346.88
Erosion Control Mats (SY)		\$ 1.87	213.33	\$ 399.36
Landscape Mulch (SY)		\$ 3.58	213.33	\$ 762.88
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	101.33	\$ 6,179.71
Plastic Filter Fabric (SY)		\$ 5.72	101.33	\$ 580.03
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
Erosion Control Total				\$ 16,018.37
Construction Cost Total				\$ 429,355.12
Traffic Control (8% of Construction Total \$)				\$ 34,348.41
Construction Cost Grand Total				\$ 463,703.53
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	75.00	\$ 4,950.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Phone				
Aerial	\$ 11.00	\$ 27.50	75.00	\$ 2,887.50
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	75.00	\$ 2,887.50
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
Utility Relocation Total				\$ 17,600.00
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	3,000.00	\$ 12,000.00
ROW Total				\$ 12,000.00



**Photo 1:**



**Photo 2:**

Cross Creek Trail

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Cross Creek Trail

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

General Information		Map	
Project ID			
Street Name	Darren Drive		
Site Visit Date	5/8/13		
Road Classification	Minor road		
Project Notes			
Rural Typical Section			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-10'		
Existing Shld Width (paved and grass) (feet)	2'		
Existing Side Slopes	2:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	3		
Pipe Type and Size	3-96" CMP		
Pipe Condition (1-5) (1 is new)	3		
Condition Notes:			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands	None		
Ditches	None		
Utilities (Visual Inspection)			
Electric	Yes		
Cable	Yes		
Phone	Yes		
Gas	Unknown		
Water	Yes		
Sewer	No		
Other			
Proposed Design			
Roadway Section	Replace in kind		
Proposed Design	Triple 8' x 8' box culvert		
Utility Relocations	Phone, cable		
Guardrail Replacement	Need to add guardrail due to sideslopes and culvert installation		
Miscellaneous Features	Zone AE Floodplain Analysis Required		
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$42,264	
Right of Way Cost	Assuming project extends 3,750 sf beyond ROW	\$15,000	
Utility Relocation Cost	Buried phone and cable	\$10,725	
Construction Cost	1/3 acre clearing and grubbing, Guardrails	\$297,641	
Environmental Permits	Permits, Zone AE Floodway Analysis	\$18,000	
<b>Total Planning Estimate</b>		<b>\$383,630</b>	



**Photo 1:**



**Photo 2:**

**130 Darren Drive**

**Photo Date:**

6/03/2013

**Taken By:**

Tony Hicks

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1,040.00	\$ 5,829.55
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	104.00	\$ 5,613.50
End Anchorage (EA)		\$ 1,380.00	4.00	\$ 5,520.00
<b>Subtotal</b>				<b>\$ 16,963.05</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 11,996.39

Roadway Total \$ 28,959.44

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	755.56	\$ 7,842.67
96" CMP (LF)	\$ 63.00		70.00	\$ 13,230.00
96" RCP		\$ 455.00	0.00	\$ -
Class A Conc (CY)		\$ 892.19	184.86	\$ 164,929.87
Steel (lb)		\$ 1.42	19,942.00	\$ 28,237.87
Pipe Bedding (CY)		\$ 48.60	50.10	\$ 2,434.86
Trench Backfill (CY)		\$ 2.99	778.79	\$ 2,327.02
Trench Compaction (CY)		\$ 6.36	623.03	\$ 3,962.48

Drainage Total \$ 222,964.77

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.33	\$ 3,385.80
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	2.00	\$ 8,856.00

Staging Total \$ 12,241.80

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	86.67	\$ 380.64
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	500.00	\$ 2,118.00
Check Dam Type C Silt Fence (LF)	\$ 6.79	500.00	\$ 3,396.00
Erosion Control Mats (SY)	\$ 1.87	166.67	\$ 312.00
Landscape Mulch (SY)	\$ 3.58	166.67	\$ 596.00
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	69.33	\$ 4,228.22
Plastic Filter Fabric (SY)	\$ 5.72	69.33	\$ 396.86
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 11,427.73

Construction Cost Total \$ 275,593.74

Traffic Control (8% of Construction Total \$) \$ 22,047.50

Construction Cost Grand Total \$ 297,641.24

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 10,725.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	3,750.00	\$ 15,000.00
<b>ROW Total</b>			<b>\$ 15,000.00</b>



General Information		Map	
Project ID			
Street Name	118 Davis Road		
Site Visit Date	5/21/13		
Road Classification	Minor arterial		
Project Notes			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	1-12'		
Existing Shld Width (paved and grass) (feet)	None		
Existing Side Slopes	1:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	1		
Pipe Type and Size	2-48", 1-24"		
Pipe Condition (1-5) (1 is new)	4		
Condition Notes:			
Pavement Type/Condition	Gravel/fair		
Environmental Features			
Wetlands	Noted		
Ditches	None		
Utilities (Visual Inspection)			
Electric			
Cable			
Phone	Aerial Crossing		
Gas			
Water			
Sewer			
Other			
Proposed Design			
Roadway Section	Local gravel road specifications. For costing purposes the cost of a temporary gravel road has been doubled.		
Culvert Size & Material	five-barrel 10' x 4', concrete, 85' length. For costing purposes, concrete and steel unit values for a double and triple culvert for have been combined		
Utility Relocations	Aerial Phone		
Guardrail Replacement			
Miscellaneous Features	Zone A, Floodplain Analysis Required		
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% of Construction Cost and surveying needs	\$78,052	
Right of Way Cost	Assuming project extends into ROW 30,000 sf	\$120,000	
Utility Relocation Cost	Aerial utilities	\$3,300	
Construction Cost	Assuming 1/5 acre clearing and grubbing	\$655,519	
Environmental Permits	Permits, Zone A Floodplain Analysis	\$15,000	
<b>Total Planning Estimate</b>		<b>\$871,871</b>	



**Photo 1:**



**Photo 2:**

**Davis Road**

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Davis Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1,248.00	\$ 6,995.46
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 6,995.46</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 27,417.89

Roadway Total \$ 34,413.34

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	1,133.33	\$ 11,764.00
24" CMP (LF)	\$ 16.38		85.00	\$ 4,176.90
48" CMP (LF)	\$ 24.78		170.00	\$ 12,637.80
42" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	471.27	\$ 420,456.98
Steel (lb)		\$ 1.42	53,117.00	\$ 75,213.67
Pipe Bedding (CY)		\$ 48.60	167.60	\$ 8,145.36
Trench Backfill (CY)		\$ 2.99	1,110.40	\$ 3,317.88
Trench Compaction (CY)		\$ 6.36	888.32	\$ 5,649.72

Drainage Total \$ 541,362.30

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	208.00	\$ 147.26

Signing and Marking Total \$ 147.26

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.20	\$ 2,052.00
Temporary Gravel Road (SY)	\$ 15.42	0.00	\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	2.00	\$ 8,856.00

Staging Total \$ 11,202.53

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	421.78	\$ 1,852.45
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	680.00	\$ 2,880.48
Check Dam Type C Silt Fence (LF)	\$ 6.79	680.00	\$ 4,618.56
Erosion Control Mats (SY)	\$ 1.87	226.67	\$ 424.32
Landscape Mulch (SY)	\$ 3.58	226.67	\$ 810.56
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	138.67	\$ 8,456.45
Plastic Filter Fabric (SY)	\$ 5.72	138.67	\$ 793.73
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 19,836.54

Construction Cost Total \$ 606,961.98

Traffic Control (8% of Construction Total \$) \$ 48,556.96

Construction Cost Grand Total \$ 655,518.94

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	50.00	\$ 1,925.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 3,300.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	30,000.00	\$ 120,000.00
<b>ROW Total</b>			<b>\$ 120,000.00</b>

General Information		Map
<b>Project ID</b>		
<b>Street Name</b>	<b>308 Deauville Way</b>	
<b>Site Visit Date</b>	2/4/2016	
<b>Road Classification</b>	Minor road	
<b>Project Notes</b>		
Cul de sac ends where multiple drainage areas converge (low point). Culvert services drainage way behind houses on north side of Deauville Way (opposite 308). Pipe passes under a private driveway and turn 45 degree to empty along side concrete spill way.		
<b>Field Notes</b>		
<b>Design (Existing Site Features)</b>		
<b>Existing Road Laneage</b>	2-13'	
<b>Existing Shld Width (paved and grass) (feet)</b>	N/A	
<b>Existing Side Slopes</b>	N/A	
<b>Existing Guardrail</b>	N/A	
<b>Depth fm Pavement to Top of Culvert (ft):</b>	2'	
<b>Pipe Type and Size</b>	18" CMP	
<b>Pipe Condition (1-5) (1 is new)</b>	3	
Upstream end of pipe almost completely blocked (see Photo 1).		
<b>Pavement Type/Condition</b>	Asphalt/Good	
<b>Environmental Features</b>		
<b>Wetlands</b>		
<b>Ditches</b>		
<b>State Waters</b>		
<b>Utilities (Visual Inspection)</b>		
<b>Electric</b>	Unknown	
<b>Cable</b>	Buried	
<b>Phone</b>	Unknown	
<b>Gas</b>	Unknown	
<b>Water</b>	Unknown	
<b>Sewer</b>	Unknown	
<b>Other</b>	Broadband buried	
<b>Stage Construction Options</b>		
<b>Close Location to Traffic</b>		
<b>Maintain One Lane - No Temp Pavement</b>		
<b>Maintain One Lane - Temp Pavement</b>		
Stage Construction Notes: <b>Private driveway needs to be considered</b>		
<b>Proposed Design</b>		
<b>Roadway Section</b>	Typical	
<b>Culvert Size &amp; Material</b>	2 x 30" round RCPs along current path with 45 degree bend. Additional excavation required to lower inlet 1' for upsizing purposes. Cost of removing each headwall assumed to be equal to removal of entire length of pipe.	
<b>Utility Relocations</b>	Buried cable and broadband wires	
<b>Guardrail Replacement</b>		
<b>Miscellaneous Features</b>		
<b>Planning Cost Estimate</b>		
<b>Type</b>	<b>Notes</b>	<b>Total</b>
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$17,481
<b>Right of Way Cost</b>	Assuming entire project is outside of ROW, 1/3 acre	\$58,080
<b>Utility Relocation Cost</b>	Buried cable, broadband	\$7,150
<b>Construction Cost</b>		\$124,805
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000
<b>Total Planning Estimate</b>		<b>\$217,516</b>



**Photo 1:** Upstream end of culvert looking South towards Deauville Way.



**Photo 2:** Downstream end looking West towards Deauville Way.

## Deauville Way

**Photo Date:**

2/5/2016

**Taken By:**

Christian Helfrich

**Page**

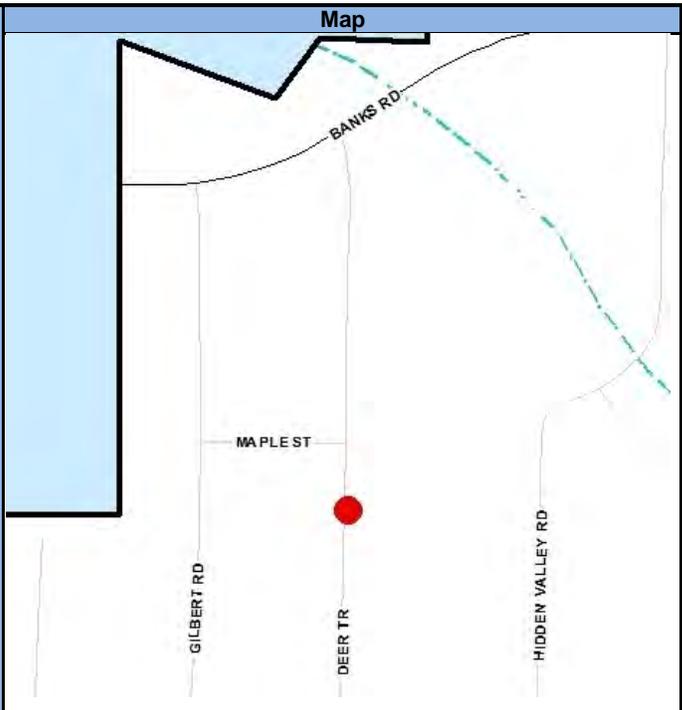
1

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	0.00	\$ -
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	9.50	\$ 479.37
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 479.37</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 4,837.77</b>
<b>Roadway Total</b>				<b>\$ 5,317.14</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	697.55	\$ 7,240.53
18" CMP (LF)	\$ 5.74		915.00	\$ 5,248.44
30" RCP (LF)		\$ 105.60	610.00	\$ 64,416.00
Class A Conc (CY)		\$ 892.19	9.92	\$ 8,850.50
Steel (lb)		\$ 1.42	18.04	\$ 25.55
Pipe Bedding (CY)		\$ 48.60	107.31	\$ 5,215.50
Trench Backfill (CY)		\$ 2.99	653.72	\$ 1,953.31
Trench Compaction (CY)		\$ 6.36	522.97	\$ 3,326.11
<b>Drainage Total</b>				<b>\$ 96,275.94</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	406.67	\$ 1,786.08
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	610.00	\$ 2,583.96
Check Dam Type C Silt Fence (LF)		\$ 6.79	610.00	\$ 4,143.12
Erosion Control Mats (SY)		\$ 1.87	0.00	\$ -
Landscape Mulch (SY)		\$ 3.58	0.00	\$ -
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	0.00	\$ -
Plastic Filter Fabric (SY)		\$ 5.72	0.00	\$ -
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 8,513.16</b>
<b>Construction Cost Total</b>				<b>\$115,560.24</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 9,244.82</b>
<b>Construction Cost Grand Total</b>				<b>\$124,805.06</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	100.00	\$ 7,150.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 7,150.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	14,520.00	\$ 58,080.00	
<b>ROW Total</b>			<b>\$ 58,080.00</b>	



General Information	
Project ID	
Street Name	175 Deer Trail
Site Visit Date	
Road Classification	Internal Local
Project Notes	
Storm pipe is metal and over 30 years old and undersized causing road to flood repeatedly.	
Field Notes	
Design (Existing Site Features)	
Existing Road Laneage	2
Existing Shld Width (paved and grass) (feet)	NA - curb & gutter
Existing Side Slopes	NA - curb & gutter
Existing Guardrail	None
Depth fm Pavement to Top of Culvert (ft):	NA
Pipe Type and Size	CMP, 24-inch Dia.
Pipe Condition (1-5) (1 is new)	4
Condition Notes: Pipe and associated structures are in poor condition.	
Pavement Type/Condition	average
Environmental Features	
Wetlands	No
Ditches	NA
Utilities (Visual Inspection)	
Electric	Yes
Cable	Yes
Phone	Yes
Gas	Unknown
Water	Yes
Sewer	No
Other	



Stage Construction Options	
Close Location to Traffic	
Maintain One Lane - No Temp Pavement	
Maintain One Lane - Temp Pavement	
Stage Construction Notes: Minimal impacts to traffic and access can be maintained to all properties.	

Proposed Design	
Roadway Section	Typical subdivision with curb & gutter
Culvert Size & Material	Replace existing pipe with 36-inch RCP, approximately 312 ft.
Utility Relocations	As needed
Guardrail Replacement	None
Miscellaneous Features	Upgrade inlets, headwalls and junction boxes

Planning Cost Estimate		
Type	Notes	Total
Design	Includes 10% Construction Cost and surveying needs	\$9,211
Right of Way Cost	Assuming project extends 12,000 sf beyond ROW	\$20,000
Utility Relocation Cost	Buried and aerial utilities	\$17,600
Construction Cost	See estimate sheet	\$42,112
Environmental Permits	None expected	
<b>Total Planning Estimate</b>		<b>\$88,923</b>



**Photo 1:**



**Photo 2:**

**175 Deer Trail**

**Photo Date:**

6/9/2016

**Taken By:**

Tony Hicks

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	125.00	\$ 700.67
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	25.00	\$ 1,261.50
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
<b>Subtotal</b>				<b>\$ 10,328.57</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 1,435.33

**Roadway Total \$ 11,763.90**

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	72.59	\$ 753.51
36" CMP (LF)	\$ 16.38		168.00	\$ 2,751.84
36" RCP (LF)		\$ 134.40	56.00	\$ 7,526.40
Class A Conc (CY)		\$ 892.19	7.20	\$ 6,423.75
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	10.37	\$ 504.00
Trench Backfill (CY)		\$ 2.99	51.82	\$ 154.84
Trench Compaction (CY)		\$ 6.36	41.46	\$ 263.66

**Drainage Total \$ 18,378.01**

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

**Signing and Marking Total \$ -**

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

**Staging Total \$ 5,454.00**

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	17.22	\$ 75.64
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	224.00	\$ 948.86
Check Dam Type C Silt Fence (LF)	\$ 6.79	224.00	\$ 1,521.41
Erosion Control Mats (SY)	\$ 1.87	74.67	\$ 139.78
Landscape Mulch (SY)	\$ 3.58	74.67	\$ 267.01
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	6.67	\$ 406.56
Plastic Filter Fabric (SY)	\$ 5.72	6.67	\$ 38.16
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

**Erosion Control Total \$ 3,397.42**

**Construction Cost Total \$ 38,993.32**

Traffic Control (8% of Construction Total \$) \$ 3,119.47

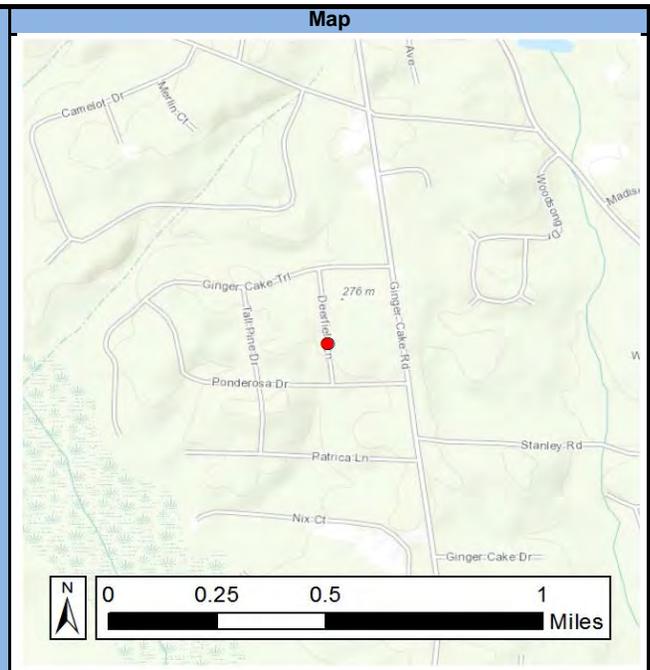
**Construction Cost Grand Total \$ 42,112.79**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 17,600.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	5,000.00	\$ 20,000.00
<b>ROW Total</b>			<b>\$ 20,000.00</b>



General Information	
<b>Project ID</b>	
<b>Street Name</b>	<b>130 Deerfield Lane</b>
<b>Site Visit Date</b>	5/21/13
<b>Road Classification</b>	Minor road
Project Notes	
Replace 30-yr old CMP with RCP. Provide manhole access to pipe for inspection and maintenance. May impact a driveway. One of several pipe replacement projects in subdivision	
Field Notes	
Design (Existing Site Features)	
<b>Existing Road Laneage</b>	2-12.5'
<b>Existing Shld Width (paved and grass) (feet)</b>	NA - curb & gutter
<b>Existing Side Slopes</b>	NA - curb & gutter
<b>Existing Guardrail</b>	NA - curb & gutter
<b>Depth fm Pavement to Top of Culvert (ft):</b>	Assumed 3'
<b>Pipe Type and Size</b>	CMP, 36"
<b>Pipe Condition (1-5) (1 is new)</b>	5
Condition Notes: Pipe and associated structures are old and in poor condition	
<b>Pavement Type/Condition</b>	Average
Environmental Features	
<b>Wetlands</b>	None
<b>Ditches</b>	None
Utilities (Visual Inspection)	
<b>Electric</b>	Yes
<b>Cable</b>	Yes
<b>Phone</b>	Yes
<b>Gas</b>	Unknown
<b>Water</b>	Yes
<b>Sewer</b>	No
<b>Other</b>	



Stage Construction Options	
<b>Close Location to Traffic</b>	
<b>Maintain One Lane - No Temp Pavement</b>	X
<b>Maintain One Lane - Temp Pavement</b>	
Stage Construction Notes:	
<b>Minimal impacts to traffic and access can be maintained to all properties.</b>	
Work may require repair to driveway	

Proposed Design	
<b>Roadway Section</b>	Typical with curb and gutter. Road dimensions estimated with Google Earth. Driveway costed as 4" concrete sidewalk.
<b>Culvert Size &amp; Material</b>	Replace existing pipe with 36" RCP, approximately 56'. Cost of headwall removal assumed equal to removal of entire length of pipe.
<b>Utility Relocations</b>	Buried utilities
<b>Guardrail Replacement</b>	
<b>Miscellaneous Features</b>	Previous inspection notes called for upgrading inlets, headwalls and junction boxes to modern design. Cost of pipe, headwalls, and inlets have been included in this design.

Planning Cost Estimate		
Type	Notes	Total
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$9,211
<b>Right of Way Cost</b>	Assuming project extends 5,000 sf beyond ROW	\$20,000
<b>Utility Relocation Cost</b>	Buried utilities	\$17,600
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$42,113
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000

<b>Total Planning Estimate</b>	<b>\$98,924</b>
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**Photo 1:**



**Photo 2:**

**131 Deerfield Lane**

**Photo Date:**

1/27/2012

**Taken By:**

Tony Hicks

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	125.00	\$ 700.67
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	25.00	\$ 1,261.50
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
<b>Subtotal</b>				<b>\$ 10,328.57</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 1,435.33

**Roadway Total \$ 11,763.90**

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	72.59	\$ 753.51
36" CMP (LF)	\$ 16.38		168.00	\$ 2,751.84
36" RCP (LF)		\$ 134.40	56.00	\$ 7,526.40
Class A Conc (CY)		\$ 892.19	7.20	\$ 6,423.75
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	10.37	\$ 504.00
Trench Backfill (CY)		\$ 2.99	51.82	\$ 154.84
Trench Compaction (CY)		\$ 6.36	41.46	\$ 263.66

**Drainage Total \$ 18,378.01**

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

**Signing and Marking Total \$ -**

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

**Staging Total \$ 5,454.00**

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	17.22	\$ 75.64
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	224.00	\$ 948.86
Check Dam Type C Silt Fence (LF)	\$ 6.79	224.00	\$ 1,521.41
Erosion Control Mats (SY)	\$ 1.87	74.67	\$ 139.78
Landscape Mulch (SY)	\$ 3.58	74.67	\$ 267.01
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	6.67	\$ 406.56
Plastic Filter Fabric (SY)	\$ 5.72	6.67	\$ 38.16
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

**Erosion Control Total \$ 3,397.42**

**Construction Cost Total \$ 38,993.32**

Traffic Control (8% of Construction Total \$) \$ 3,119.47

**Construction Cost Grand Total \$ 42,112.79**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 17,600.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	5,000.00	\$ 20,000.00
<b>ROW Total</b>			<b>\$ 20,000.00</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>161 Deerfield Lane</b>		
<b>Site Visit Date</b>	5/21/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Storm pipe in Beverly Manor subdivision is metal and over 30 years old. Typical catch basin construction does not allow for inspection or maintenance. Many junction boxes are masonry block and in poor condition.			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-12.5'		
<b>Existing Shld Width (paved and grass) (feet)</b>	NA - curb & gutter		
<b>Existing Side Slopes</b>	NA - curb & gutter		
<b>Existing Guardrail</b>	NA - curb & gutter		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	Assumed 3'		
<b>Pipe Type and Size</b>	CMP, 30"		
<b>Pipe Condition (1-5) (1 is new)</b>	5		
Condition Notes: Pipe and associated structures are old and in poor condition			
<b>Pavement Type/Condition</b>	Average		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Yes		
<b>Cable</b>	Yes		
<b>Phone</b>	Yes		
<b>Gas</b>	Unknown		
<b>Water</b>	Yes		
<b>Sewer</b>	No		
<b>Other</b>			
<b>Stage Construction Options</b>			
<b>Close Location to Traffic</b>			
<b>Maintain One Lane - No Temp Pavement</b>		<b>Maintain One Lane - Temp Pavement</b>	X
Stage Construction Notes:			
<b>Minimal impacts to traffic and access can be maintained to all</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>	Typical with curb and gutter. Road dimensions estimated with Google Earth.		
<b>Culvert Size &amp; Material</b>	Replace existing pipe with 36" RCP, approximately 64'. Cost of headwall removal assumed equal to removal of entire length of pipe.		
<b>Utility Relocations</b>	Assuming buried water line needs relocating.		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>	Previous inspection notes called for upgrading inlets, headwalls and junction boxes to modern design. Cost of pipe, headwalls, and inlets have been included in this design.		
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$9,310	
<b>Right of Way Cost</b>	Assuming projects extends 5,000 sf beyond ROW	\$20,000	
<b>Utility Relocation Cost</b>	Water main	\$17,600	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$43,102	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$100,012</b>	



**Photo 1:**



**Photo 2:**

**161 Deerfield Lane**

**Photo Date:**

6/17/2013

**Taken By:**

Tony Hicks

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	125.00	\$ 700.67
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90		\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
<b>Subtotal</b>				<b>\$ 9,067.07</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 1,458.44</b>
<b>Roadway Total</b>				<b>\$ 10,525.51</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	82.96	\$ 861.16
36" CMP (LF)	\$ 16.38		192.00	\$ 3,144.96
36" RCP (LF)		\$ 134.40	64.00	\$ 8,601.60
Class A Conc (CY)		\$ 892.19	7.20	\$ 6,423.75
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	11.85	\$ 576.00
Trench Backfill (CY)		\$ 2.99	61.21	\$ 182.89
Trench Compaction (CY)		\$ 6.36	48.97	\$ 311.43
<b>Drainage Total</b>				<b>\$ 20,101.78</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	21.67	\$ 95.16
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	256.00	\$ 1,084.42
Check Dam Type C Silt Fence (LF)		\$ 6.79	256.00	\$ 1,738.75
Erosion Control Mats (SY)		\$ 1.87	85.33	\$ 159.74
Landscape Mulch (SY)		\$ 3.58	85.33	\$ 305.15
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	6.67	\$ 406.56
Plastic Filter Fabric (SY)		\$ 5.72	6.67	\$ 38.16
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 3,827.94</b>
<b>Construction Cost Total</b>				<b>\$ 39,909.24</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 3,192.74</b>
<b>Construction Cost Grand Total</b>				<b>\$ 43,101.98</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 17,600.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	5,000.00	\$ 20,000.00	
<b>ROW Total</b>			<b>\$ 20,000.00</b>	



General Information		Map	
Project ID			
Street Name	325 Derby Drive		
Site Visit Date	1/20/2016		
Road Classification	Minor road		
<b>Project Notes</b>			
Streambank erosion intense at this site. Existing roadside CMP drainage pipe is emptying directly above culvert.			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
Existing Road Laneage	2-13'		
Existing Shld Width (paved and grass) (feet)	10'		
Existing Side Slopes	3:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	6.25'		
Pipe Type and Size	54" CMP		
Pipe Condition (1-5) (1 is new)	3		
Condition Notes: Concrete headwalls. Streambank blowout upstream and major blowout downstream			
Pavement Type/Condition	Asphalt/Good		
<b>Environmental Features</b>		<b>Stage Construction Options</b>	
Wetlands		Close Location to Traffic	
Ditches	Roadside drainage ditches	Maintain One Lane - No Temp Pavement	X
State Waters		Maintain One Lane - Temp Pavement	
		Stage Construction Notes:	
		Clearing and grubbing, erosion control essential	
<b>Buried</b>			
Electric	Buried		
Cable	Buried		
Phone	Unknown		
Gas	Unknown		
Water	Unknown		
Sewer	Unknown		
Other	Broadband - Buried		
<b>Proposed Design</b>			
Roadway Section	Typical		
Culvert Size & Material	54" round RCP with straight headwall. Assuming cost of removing existing headwalls is equal to removal of entire existing pipe		
Utility Relocations	Removal/replacement of buried electric, cable, and broadband lines		
Guardrail Replacement			
Miscellaneous Features			
<b>Planning Cost Estimate</b>			
Type	Notes	Total	
Design	Includes 10% of Construction Cost and surveying needs	\$13,319	
Right of Way Cost	Assuming project extends past ROW, 1/20 acre	\$8,712	
Utility Relocation Cost		\$14,520	
Construction Cost		\$83,189	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$129,740</b>	





**Photo 1:** Upstream end of culvert looking East towards Derby Drive



**Photo 2:** Downstream end of culvert looking West towards Derby Drive

## Derby Drive

**Photo Date:**

1/20/2016

**Taken By:**

David Gibbs

**Page**

1

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	169.00	\$ 947.30
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 947.30</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 2,720.07</b>
<b>Roadway Total</b>				<b>\$ 3,667.37</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	217.81	\$ 2,260.87
54" CMP (LF)	\$ 24.60		154.00	\$ 11,365.20
54" RCP (LF)		\$ 281.96	77.00	\$ 21,711.23
Class A Conc (CY)		\$ 892.19	17.58	\$ 15,684.67
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	18.54	\$ 900.90
Trench Backfill (CY)		\$ 2.99	189.59	\$ 566.50
Trench Compaction (CY)		\$ 6.36	151.67	\$ 964.64
<b>Drainage Total</b>				<b>\$53,454.00</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71		\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.25	\$ 2,565.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	2.00	\$ 8,856.00
<b>Staging Total</b>				<b>\$11,421.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	36.83	\$ 161.77
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	616.00	\$ 2,609.38
Check Dam Type C Silt Fence (LF)		\$ 6.79	616.00	\$ 4,183.87
Erosion Control Mats (SY)		\$ 1.87	68.44	\$ 128.13
Landscape Mulch (SY)		\$ 3.58	68.44	\$ 244.76
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	17.33	\$ 1,057.06
Plastic Filter Fabric (SY)		\$ 5.72	17.33	\$ 99.22
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 8,484.18</b>
<b>Construction Cost Total</b>				<b>\$77,026.54</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 6,162.12</b>
<b>Construction Cost Grand Total</b>				<b>\$83,188.67</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	60.00	\$ 5,940.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	60.00	\$ 4,290.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	60.00	\$ 4,290.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$14,520.00</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	2,178.00	\$ 8,712.00
<b>ROW Total</b>				<b>\$ 8,712.00</b>



General Information		Map	
Project ID			
Street Name	Downing Court		
Site Visit Date	5/21/13		
Road Classification	Minor road		
Fayette Co Notes			
Rural typical section			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2 - 12'		
Existing Shld Width (paved and grass) (feet)	4' (Grass)		
Existing Side Slopes	6:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	2.00		
Pipe Type and Size	36" CMP, 45'		
Pipe Condition (1-5) (1 is new)	3		
Condition Notes:			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands	None		
Ditches	X		
Utilities (Visual Inspection)			
Electric	Aerial		
Cable	Aerial		
Phone	Aerial		
Gas			
Water	Buried		
Sewer			
Other			
Stage Construction Options			
Close Location to Traffic			
Maintain One Lane - No Temp Pavement		X	
Maintain One Lane - Temp Pavement			
Stage Construction Notes:			
Proposed Design			
Roadway Section			
Culvert Size & Material	4' x 3' box, concrete, 45' length		
Utility Relocations	Water main		
Guardrail Replacement			
Miscellaneous Features	Velocity dissipators and entrance channel need to be included to accommodate hard turn from drainage upstream drainage ditch to culvert. Yard grading for resident on downstream, low side of culvert would mitigate garage/driveway flooding. Has been accounted for in applicable construction activities.		
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$9,518	
Right of Way Cost	Assuming project extends 3,500 sf beyond ROW	\$14,000	
Utility Relocation Cost	Buried utilities	\$5,425	
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$45,184	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$84,127</b>	





**Photo 1:**



**Photo 2:**

Downing Court

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Downing Court

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	144.00	\$ 807.17
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 807.17</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 1,513.95</b>
<b>Roadway Total</b>				<b>\$ 2,321.12</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	90.00	\$ 934.20
36" CMP (LF)	\$ 19.62		45.00	\$ 2,648.70
84" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	24.43	\$ 21,791.69
Steel (lb)		\$ 1.42	2,045.50	\$ 2,896.43
Pipe Bedding (CY)		\$ 48.60	10.40	\$ 505.44
Trench Backfill (CY)		\$ 2.99	86.10	\$ 257.27
Trench Compaction (CY)		\$ 6.36	68.88	\$ 438.08
<b>Drainage Total</b>				<b>\$ 29,471.80</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	24.00	\$ 16.99
<b>Signing and Marking Total</b>				<b>\$ 16.99</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,487.98</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	21.00	\$ 92.23
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	180.00	\$ 762.48
Check Dam Type C Silt Fence (LF)		\$ 6.79	180.00	\$ 1,222.56
Erosion Control Mats (SY)		\$ 1.87	60.00	\$ 112.32
Landscape Mulch (SY)		\$ 3.58	60.00	\$ 214.56
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	32.00	\$ 1,951.49
Plastic Filter Fabric (SY)		\$ 5.72	32.00	\$ 183.17
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 4,538.81</b>
<b>Construction Cost Total</b>				<b>\$ 41,836.70</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 3,346.94</b>
<b>Construction Cost Grand Total</b>				<b>\$ 45,183.64</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 5,500.00</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	3,500.00	\$ 14,000.00
<b>ROW Total</b>				<b>\$ 14,000.00</b>

General Information		Map	
Project ID			
Street Name	Flat Creek Trail		
Site Visit Date	5/22/13		
Road Classification	Minor arterial		
Project Notes			
Rural typical section			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)	None		
Existing Side Slopes	1:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	6		
Pipe Type and Size (No headwall)	2- 60"x84" (ellip.)		
Pipe Condition (1-5) (1 is new)	3		
Condition Notes: 2 parallel streams			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands	Yes		
Ditches	None		
Utilities (Visual Inspection)			
Electric	Aerial Crossing		
Cable	Aerial Crossing		
Phone	Aerial Crossing		
Gas			
Water	Buried		
Sewer			
Other			
Proposed Design			
Roadway Section			
Culvert Size & Material	triple 10' x 4' box, concrete, 70' length. Cost of removing existing elliptical CMPs considered equivalent to cost of removing 72" round CMPs		
Utility Relocations	Water		
Guardrail Replacement	Need to provide guardrail due to side slopes and culvert installations		
Miscellaneous Features	Zone A, Floodplain Analysis required,		
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction Cost, wetland surveying	\$53,868	
Right of Way Cost	Assuming project extends 10,500 sf beyond ROW	\$42,000	
Utility Relocation Cost	Water main	\$11,000	
Construction Cost	Assuming 1/5 acre clearing and grubbing	\$413,683	
Environmental Permits	Permits, Zone A Floodplain Analysis	\$15,000	
<b>Total Planning Estimate</b>		<b>\$535,551</b>	



**Photo 1:**



**Photo 2:**

**Flat Creek Trail**

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1,536.00	\$ 8,609.79
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	600.00	\$ 32,385.60
End Anchorage (EA)		\$ 1,380.00	2.00	\$ 2,760.00
<b>Subtotal</b>				<b>\$ 43,755.39</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 17,059.82

Roadway Total \$ 60,815.22

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	1,348.15	\$ 13,993.78
72" CMP (LF)	\$ 54.00		140.00	\$ 22,680.00
72" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	232.53	\$ 207,460.48
Steel (lb)		\$ 1.42	26,567.00	\$ 37,618.87
Pipe Bedding (CY)		\$ 48.60	85.30	\$ 4,145.58
Trench Backfill (CY)		\$ 2.99	1,429.22	\$ 4,270.50
Trench Compaction (CY)		\$ 6.36	1,143.37	\$ 7,271.86

Drainage Total \$ 297,441.07

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	128.00	\$ 90.62

Signing and Marking Total \$ 90.62

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.20	\$ 2,052.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	2.00	\$ 8,856.00

Staging Total \$ 11,089.25

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	163.56	\$ 718.34
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	560.00	\$ 2,372.16
Check Dam Type C Silt Fence (LF)	\$ 6.79	560.00	\$ 3,803.52
Erosion Control Mats (SY)	\$ 1.87	186.67	\$ 349.44
Landscape Mulch (SY)	\$ 3.58	186.67	\$ 667.52
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	85.33	\$ 5,203.97
Plastic Filter Fabric (SY)	\$ 5.72	85.33	\$ 488.45
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 13,603.39

Construction Cost Total \$ 383,039.55

Traffic Control (8% of Construction Total \$) \$ 30,643.16

Construction Cost Grand Total \$ 413,682.72

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	100.00	\$ 11,000.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 11,000.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	10,500.00	\$ 42,000.00
<b>ROW Total</b>			<b>\$ 42,000.00</b>



General Information		Map													
Project ID															
Street Name	250 Grant Road														
Site Visit Date	5/22/13														
Road Classification	Minor arterial														
Project Notes															
Rural typical section															
Field Notes		<table border="1"> <thead> <tr> <th colspan="2">Stage Construction Options</th> </tr> </thead> <tbody> <tr> <td>Close Location to Traffic</td> <td>X</td> </tr> <tr> <td>Maintain One Lane - No Temp Pavement</td> <td></td> </tr> <tr> <td>Maintain One Lane - Temp Pavement</td> <td></td> </tr> <tr> <td colspan="2">Stage Construction Notes: Close roadway</td> </tr> <tr> <td colspan="2">One lane closure</td> </tr> </tbody> </table>		Stage Construction Options		Close Location to Traffic	X	Maintain One Lane - No Temp Pavement		Maintain One Lane - Temp Pavement		Stage Construction Notes: Close roadway		One lane closure	
Stage Construction Options															
Close Location to Traffic	X														
Maintain One Lane - No Temp Pavement															
Maintain One Lane - Temp Pavement															
Stage Construction Notes: Close roadway															
One lane closure															
Design (Existing Site Features)															
Existing Road Laneage	2-12'														
Existing Shld Width (paved and grass) (feet)	2'														
Existing Side Slopes	0.13														
Existing Guardrail	none														
Depth fm Pavement to Top of Culvert (ft):	Assumed 3'														
Pipe Type and Size	60" CMP														
Pipe Condition (1-5) (1 is new)	4-5														
Condition Notes:															
Pavement Type/Condition	Asphalt/Good														
Environmental Features															
Wetlands	None														
Ditches	None														
Stream	Yes														
Utilities (Visual Inspection)															
Electric	Yes														
Cable	Yes														
Phone	Yes														
Gas	Unknown														
Water	Yes														
Sewer	None														
Other															
Proposed Design															
Roadway Section	Typical														
Culvert Size & Material	Replace with 48' of 60" RCP,														
Utility Relocations	As needed														
Guardrail Replacement	None														
Miscellaneous Features															
Planning Cost Estimate															
Type	Notes	Total													
Design	Includes 10% Construction Cost and surveying needs	\$10,116													
Right of Way Cost	Assuming project does not extend beyond ROW	\$0													
Utility Relocation Cost	Buried water main	\$5,500													
Construction Cost	Applying 1/10 acre clearing and grubbing cost	\$51,162													
Environmental Permits	Assuming minimal environmental permitting required	\$10,000													
<b>Total Planning Estimate</b>		<b>\$76,779</b>													



**Photo 1:**



**Photo 2:**

**250 Grant Road**

**Photo Date:**

6/22/2016

**Taken By:**

Tony Hicks

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	168.00	\$ 941.70
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00		\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90		\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
<b>Subtotal</b>				<b>\$ 941.70</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 1,815.49

**Roadway Total \$ 2,757.18**

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	118.22	\$ 1,227.15
60" CMP (LF)	\$ 24.60		48.00	\$ 1,180.80
60" RCP (LF)		\$ 259.20	48.00	\$ 12,441.60
Class A Conc (CY)		\$ 892.19	21.58	\$ 19,253.42
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	12.44	\$ 604.80
Trench Backfill (CY)		\$ 2.99	81.76	\$ 244.30
Trench Compaction (CY)		\$ 6.36	65.41	\$ 416.00

**Drainage Total \$35,368.06**

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

**Signing and Marking Total \$ -**

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

**Staging Total \$ 5,454.00**

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	18.67	\$ 81.98
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	192.00	\$ 813.31
Check Dam Type C Silt Fence (LF)	\$ 6.79	192.00	\$ 1,304.06
Erosion Control Mats (SY)	\$ 1.87	64.00	\$ 119.81
Landscape Mulch (SY)	\$ 3.58	64.00	\$ 228.86
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	18.67	\$ 1,138.37
Plastic Filter Fabric (SY)	\$ 5.72	18.67	\$ 106.85
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

**Erosion Control Total \$ 3,793.25**

**Construction Cost Total \$47,372.49**

Traffic Control (8% of Construction Total \$) \$ 3,789.80

**Construction Cost Grand Total \$51,162.29**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 5,500.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	0.00	\$ -
<b>ROW Total</b>			<b>\$ -</b>



General Information		Map							
Project ID									
Street Name	426 Grant Road								
Site Visit Date	5/22/13								
Road Classification	Minor arterial								
<b>Project Notes</b>									
Urban typical section with valley gutter									
<b>Field Notes</b>		<b>Stage Construction Options</b>							
<b>Design (Existing Site Features)</b>		<table border="1"> <tr> <td>Close Location to Traffic</td> <td>X</td> </tr> <tr> <td>Maintain One Lane - No Temp Pavement</td> <td></td> </tr> <tr> <td>Maintain One Lane - Temp Pavement</td> <td></td> </tr> </table>		Close Location to Traffic	X	Maintain One Lane - No Temp Pavement		Maintain One Lane - Temp Pavement	
Close Location to Traffic	X								
Maintain One Lane - No Temp Pavement									
Maintain One Lane - Temp Pavement									
Existing Road Laneage	2-12'	Stage Construction Notes: Close roadway  One lane closure							
Existing Shld Width (paved and grass) (feet)	2'								
Existing Side Slopes	0.13								
Existing Guardrail	none								
Depth fm Pavement to Top of Culvert (ft):	Assumed 3'								
Pipe Type and Size	60" CMP								
Pipe Condition (1-5) (1 is new)	4-5								
Condition Notes:									
Pavement Type/Condition	Asphalt/Good								
<b>Environmental Features</b>									
Wetlands	None								
Ditches	None								
Stream	Yes								
<b>Utilities (Visual Inspection)</b>									
Electric	Yes								
Cable	Yes								
Phone	Yes								
Gas	Unknown								
Water	Yes								
Sewer	None								
Other									
<b>Proposed Design</b>									
Roadway Section	Typical								
Culvert Size & Material	Replace with 48' of 60" RCP,								
Utility Relocations	As needed								
Guardrail Replacement	None								
Miscellaneous Features									
<b>Planning Cost Estimate</b>									
Type	Notes	Total							
Design	Includes 10% Construction Cost and surveying needs	\$10,116							
Right of Way Cost	Assuming project does not extend beyond ROW	\$0							
Utility Relocation Cost	Buried water main	\$5,500							
Construction Cost	Applying 1/10 acre clearing and grubbing cost	\$51,162							
Environmental Permits	Assuming minimal environmental permitting required	\$10,000							
<b>Total Planning Estimate</b>		<b>\$76,779</b>							



**Photo 1:**



**Photo 2:**

**426 Grant Rpad**

**Photo Date:**

6/03/2016

**Taken By:**

Tony Hicks

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	168.00	\$ 941.70
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00		\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90		\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
<b>Subtotal</b>				<b>\$ 941.70</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 1,815.49

Roadway Total \$ 2,757.18

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	118.22	\$ 1,227.15
60" CMP (LF)	\$ 24.60		48.00	\$ 1,180.80
60" RCP (LF)		\$ 259.20	48.00	\$ 12,441.60
Class A Conc (CY)		\$ 892.19	21.58	\$ 19,253.42
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	12.44	\$ 604.80
Trench Backfill (CY)		\$ 2.99	81.76	\$ 244.30
Trench Compaction (CY)		\$ 6.36	65.41	\$ 416.00

Drainage Total \$35,368.06

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,454.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	18.67	\$ 81.98
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	192.00	\$ 813.31
Check Dam Type C Silt Fence (LF)	\$ 6.79	192.00	\$ 1,304.06
Erosion Control Mats (SY)	\$ 1.87	64.00	\$ 119.81
Landscape Mulch (SY)	\$ 3.58	64.00	\$ 228.86
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	18.67	\$ 1,138.37
Plastic Filter Fabric (SY)	\$ 5.72	18.67	\$ 106.85
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 3,793.25

Construction Cost Total \$47,372.49

Traffic Control (8% of Construction Total \$) \$ 3,789.80

Construction Cost Grand Total \$51,162.29

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00		\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 5,500.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	0.00	\$ -
<b>ROW Total</b>			<b>\$ -</b>



General Information		Map	
Project ID			
Street Name	226 Graves Road		
Site Visit Date	1/21/2016		
Road Classification	Minor arterial		
Project Notes			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	1-9', 2-12'		
Existing Shld Width (paved and grass) (feet)	6'		
Existing Side Slopes	4:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	4.5'		
Pipe Type and Size	30" CMP		
Pipe Condition (1-5) (1 is new)	4-5		
Condition Notes: Deformed/slightly closed. No headwall on upstream side, concrete headwall downstream.			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands			
Ditches			
State Waters			
Buried			
Electric	Aerial		
Cable	Unknown		
Phone	Aerial		
Gas	Unknown		
Water	Unknown		
Sewer	Unknown		
Other			
Proposed Design			
Roadway Section	Typical arterial		
Culvert Size & Material	2 x 30" round RCPs with straight headwall. Cost of removing existing headwall assumed equal to the removal of entire length of pipe.		
Utility Relocations			
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% of Construction Cost and surveying needs	\$10,169	
Right of Way Cost	Assuming entire project within ROW	\$0	
Utility Relocation Cost	None identified	\$0	
Construction Cost		\$51,687	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$71,856</b>	





**Photo 1:** Upstream end of culvert looking South towards Graves Road.



**Photo 2:** Downstream end of culvert.

**Graves Road**

**Photo Date:**

1/21/2016

**Taken By:**

David Gibbs

**Page**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	313.50	\$ 1,757.27
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 1,757.27</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 1,601.52

Roadway Total \$ 3,358.80

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	202.67	\$ 2,103.68
30" CMP (LF)	\$ 19.62		146.00	\$ 5,729.04
30" RCP (LF)		\$ 105.60	146.00	\$15,417.60
Class A Conc (CY)		\$ 892.19	4.98	\$ 4,443.10
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	25.33	\$ 1,231.20
Trench Backfill (CY)		\$ 2.99	166.99	\$ 498.96
Trench Compaction (CY)		\$ 6.36	133.59	\$ 849.63

Drainage Total \$30,273.20

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	47.50	\$ 33.63

Signing and Marking Total \$ 33.63

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.03	\$ 256.50
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	2.00	\$ 8,856.00

Staging Total \$ 9,146.13

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	41.17	\$ 180.80
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	288.00	\$ 1,219.97
Check Dam Type C Silt Fence (LF)	\$ 6.79	288.00	\$ 1,956.10
Erosion Control Mats (SY)	\$ 1.87	0.00	\$ -
Landscape Mulch (SY)	\$ 3.58	0.00	\$ -
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	25.33	\$ 1,544.93
Plastic Filter Fabric (SY)	\$ 5.72	25.33	\$ 145.01
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 5,046.80

Construction Cost Total \$47,858.56

Traffic Control (8% of Construction Total \$) \$ 3,828.68

Construction Cost Grand Total \$51,687.25

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ -</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	0.00	\$ -
<b>ROW Total</b>			<b>\$ -</b>



General Information		Map	
Project ID			
Street Name	130 Greenfield Circle		
Site Visit Date	2/4/2016		
Road Classification	Minor road		
<b>Project Notes</b>			
Pipe empties into small impoundment.			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
Existing Road Laneage	2-12.5'		
Existing Shld Width (paved and grass) (feet)	15'		
Existing Side Slopes	4-5:1		
Existing Guardrail	N/A		
Depth fm Pavement to Top of Culvert (ft):	3'		
Pipe Type and Size	36" CMP		
Pipe Condition (1-5) (1 is new)	4		
Substantial rusting. Rip rap embankment blowout on downstream side.			
Pavement Type/Condition	Asphalt/Good		
<b>Environmental Features</b>		<b>Stage Construction Options</b>	
Wetlands		Close Location to Traffic	
Ditches		Maintain One Lane - No Temp Pavement	X
State Waters		Maintain One Lane - Temp Pavement	
Other	Small private impoundment	Stage Construction Notes: Impoundment on downstream end will need temporary damming	
<b>Utilities (Visual Inspection)</b>			
Electric	Unknown		
Cable	Buried		
Phone	Unknown		
Gas	Unknown		
Water	Unknown		
Sewer	Unknown		
Other	Broadband buried		
<b>Proposed Design</b>			
Roadway Section			
Culvert Size & Material	5' x 3' concrete box culvert with wingwalls		
Utility Relocations	Buried cable and broadband. Possible fire hydrant relocation (90' from culvert on downstream side).		
Guardrail Replacement			
Miscellaneous Features			
<b>Planning Cost Estimate</b>			
Type	Notes	Total	
Design	Includes 10% Construction cost and surveying needs	\$18,802	
Right of Way Cost	Assuming project lies entirely within ROW	\$0	
Utility Relocation Cost	Assuming a total of 100' of buried utilities	\$7,150	
Construction Cost		\$63,018	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$98,969</b>	



**Photo 1:** Upstream end of culvert looking West towards Greenfield Circle.



**Photo 2:** Downstream end looking East towards Greenfield Circle.

## Greenfield Circle

**Photo Date:**

2/4/2016

**Taken By:**

Christian Helfrich

**Page**

1

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	175.00	\$ 980.93
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 9,347.33</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 2,351.05

Roadway Total \$ 11,698.38

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	110.83	\$ 1,150.45
18" CMP	\$ 5.74		171.00	\$ 980.86
30" RCP		\$ 105.60	0.00	\$ -
Class A Conc (CY)		\$ 892.19	33.07	\$ 29,500.20
Steel (lb)		\$ 1.42	3149.90	\$ 4,460.26
Pipe Bedding (CY)		\$ 48.60	15.30	\$ 743.58
Trench Backfill (CY)		\$ 2.99	103.80	\$ 310.15
Trench Compaction (CY)		\$ 6.36	83.04	\$ 528.12

Drainage Total \$ 37,673.61

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	21.00	\$ 14.87

Signing and Marking Total \$ 14.87

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.05	\$ 513.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 4,955.87

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	24.89	\$ 109.31
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	228.00	\$ 965.81
Check Dam Type C Silt Fence (LF)	\$ 6.79	228.00	\$ 1,548.58
Erosion Control Mats (SY)	\$ 1.87	25.33	\$ 47.42
Landscape Mulch (SY)	\$ 3.58	25.33	\$ 90.59
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	18.67	\$ 1,138.37
Plastic Filter Fabric (SY)	\$ 5.72	18.67	\$ 106.85
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 4,006.93

Construction Cost Total \$ 58,349.65

Traffic Control (8% of Construction Total \$) \$ 4,667.97

Construction Cost Grand Total \$ 63,017.62

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	100.00	\$ 7,150.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 7,150.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	0.00	\$ -
<b>ROW Total</b>			<b>\$ -</b>



General Information		Map	
Project ID			
Street Name	250 Greenfield Circle		
Site Visit Date	2/4/2016		
Road Classification	Minor road		
Project Notes			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)	14'		
Existing Side Slopes	3:1		
Existing Guardrail	N/A		
Depth fm Pavement to Top of Culvert (ft):	5'		
Pipe Type and Size	2-36" CMPs		
Pipe Condition (1-5) (1 is new)	4-5		
Considerable rusting. One pipe blocked by debris. Water running under the other pipe as well as through.			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands			
Ditches			
State Waters			
Utilities (Visual Inspection)			
Electric	Unknown		
Cable	Unknown		
Phone	Unknown		
Gas	Unknown		
Water	Unknown		
Sewer	Unknown		
Other	Unknown		
Proposed Design			
Roadway Section	Typical		
Culvert Size & Material	2 x 42" round RCPs with straight headwalls.		
Utility Relocations	May need to relocate fire hydrant (70' from culvert, downstream side).		
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction cost and surveying needs	\$19,098	
Right of Way Cost	Assuming project lies entirely within ROW	\$0	
Utility Relocation Cost	None positively identified	\$0	
Construction Cost		\$65,976	
Environmental Permits	Includes permitting and Zone A Floodway study	\$15,000	
<b>Total Planning Estimate</b>		<b>\$100,073</b>	





**Photo 1:** Upstream end of culvert looking West towards Greenfield Circle.



**Photo 2:** Downstream end looking East towards Greenfield Circle.

## Greenfield Circle

**Photo Date:**

2/4/2016

**Taken By:**

Christian Helfrich

**Page**

1

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	288.00	\$ 1,614.34
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 9,980.74</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 2,505.82

Roadway Total \$ 12,486.55

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	237.50	\$ 2,465.25
36" CMP (LF)	\$ 19.62		108.00	\$ 6,356.88
42" RCP (LF)		\$ 142.52	108.00	\$ 15,392.59
Class A Conc (CY)		\$ 892.19	14.66	\$ 13,079.48
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	25.00	\$ 1,215.00
Trench Backfill (CY)		\$ 2.99	201.39	\$ 601.75
Trench Compaction (CY)		\$ 6.36	161.11	\$ 1,024.67

Drainage Total \$ 40,135.63

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.15	\$ 1,539.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,967.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	40.00	\$ 175.68
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	108.00	\$ 457.49
Check Dam Type C Silt Fence (LF)	\$ 6.79	108.00	\$ 733.54
Erosion Control Mats (SY)	\$ 1.87	12.00	\$ 22.46
Landscape Mulch (SY)	\$ 3.58	12.00	\$ 42.91
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	16.00	\$ 975.74
Plastic Filter Fabric (SY)	\$ 5.72	16.00	\$ 91.58
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 2,499.41

Construction Cost Total \$ 61,088.59

Traffic Control (8% of Construction Total \$) \$ 4,887.09

Construction Cost Grand Total \$ 65,975.68

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ -</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	0.00	\$ -
<b>ROW Total</b>			<b>\$ -</b>



General Information		Map	
Project ID			
Street Name	110 Gristmill Drive		
Site Visit Date	5/21/13		
Road Classification	Minor road		
<b>Project Notes</b>			
Urban Typical Section with curb and gutter along sidewalks			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)	grass 6'		
Existing Side Slopes	N/A		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	6'		
Pipe Type and Size	48"-CMP		
Pipe Condition (1-5) (1 is new)	5 (Installation)		
Condition Notes: Concrete Headwall at Ends			
Pavement Type/Condition	Asphalt/Good		
<b>Environmental Features</b>			
Wetlands	None		
Ditches	None		
<b>Utilities (Visual Inspection)</b>			
Electric	Buried		
Cable	Buried		
Phone	Buried		
Gas	Buried		
Water	Buried		
Sewer	Buried		
Other			
<b>Stage Construction Options</b>			
Close Location to Traffic			
Maintain One Lane - No Temp Pavement		X	
Maintain One Lane - Temp Pavement			
Stage Construction Notes:			
If replacement with round pipe then phase construction to have at least one lane in each direction at all times			
<b>Proposed Design</b>			
Roadway Section	Replace urban section w/ sidewalks		
Culvert Size & Material	6' x 3' box, concrete, 80' length. Cost of removing headwalls assumed to be equal to removal of entire length of pipe.		
Utility Relocations	Electric, cable, phone, gas, water, sewer		
Guardrail Replacement			
Miscellaneous Features	Alignment needs to be altered or downstream pipe and grading needs alterations to correct crossing flow paths that has caused downstream pipe cover to be washed away. Has been accounted for in construction cost estimate		
<b>Planning Cost Estimate</b>			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$14,967	
Right of Way Cost	Assuming project extends 2,000 sf beyond ROW	\$8,000	
Utility Relocation Cost	Buried utilities	\$26,675	
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$99,668	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$159,309</b>	



**Photo 1:**



**Photo 2:**

Gristmill Drive

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**

Gristmill Drive



**Photo 4:**

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	192.00	\$ 1,076.22
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	30.00	\$ 1,774.80
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	30.00	\$ 1,513.80
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 4,364.82</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 3,858.83

Roadway Total \$ 8,223.65

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	325.93	\$ 3,383.11
48" CMP (LF)	\$ 24.60		160.00	\$ 11,808.00
48" RCP		\$ 193.20	0.00	\$ -
Class A Conc (CY)		\$ 892.19	51.64	\$ 46,072.59
Steel (lb)		\$ 1.42	5,258.00	\$ 7,445.33
Pipe Bedding (CY)		\$ 48.60	24.30	\$ 1,180.98
Trench Backfill (CY)		\$ 2.99	361.77	\$ 1,080.98
Trench Compaction (CY)		\$ 6.36	289.42	\$ 1,840.71

Drainage Total \$ 72,811.69

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,454.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	59.73	\$ 262.35
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	320.00	\$ 1,355.52
Check Dam Type C Silt Fence (LF)	\$ 6.79	320.00	\$ 2,173.44
Erosion Control Mats (SY)	\$ 1.87	106.67	\$ 199.68
Landscape Mulch (SY)	\$ 3.58	106.67	\$ 381.44
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	21.33	\$ 1,300.99
Plastic Filter Fabric (SY)	\$ 5.72	21.33	\$ 122.11
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 5,795.53

Construction Cost Total \$ 92,284.88

Traffic Control (8% of Construction Total \$) \$ 7,382.79

Construction Cost Grand Total \$ 99,667.67

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	50.00	\$ 4,125.00
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
<b>Utility Relocation Total</b>				<b>\$ 26,675.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	2,000.00	\$ 8,000.00
<b>ROW Total</b>			<b>\$ 8,000.00</b>

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>Heritage Way - North</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Urban typical section with valley gutter,			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-10'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4		
<b>Existing Side Slopes</b>	flat		
<b>Existing Guardrail</b>	none		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	4		
<b>Pipe Type and Size</b>	48" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	48", RCP, 400' length		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$20,409	
<b>Right of Way Cost</b>	Assuming 7,500 sf outside of ROW	\$30,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$26,400	
<b>Construction Cost</b>	Applying 1/10 acre clearing and grubbing cost	\$154,090	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$240,898</b>	



**Photo 1:**



**Photo 2:**

Heritage Way - North

**Photo Date:**

7/2/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	120.00	\$ 672.64
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00		\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90		\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
<b>Subtotal</b>				<b>\$ 1,855.84</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 6,160.49

Roadway Total \$ 8,016.33

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	977.78	\$ 10,149.33
48" CMP (LF)	\$ 24.60		400.00	\$ 9,840.00
48" RCP (LF)		\$ 193.20	400.00	\$ 77,280.00
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	88.89	\$ 4,320.00
Trench Backfill (CY)		\$ 2.99	933.83	\$ 2,790.29
Trench Compaction (CY)		\$ 6.36	747.07	\$ 4,751.33

Drainage Total \$ 121,353.93

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,454.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	253.33	\$ 1,112.64
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	400.00	\$ 1,694.40
Check Dam Type C Silt Fence (LF)	\$ 6.79	400.00	\$ 2,716.80
Erosion Control Mats (SY)	\$ 1.87	133.33	\$ 249.60
Landscape Mulch (SY)	\$ 3.58	133.33	\$ 476.80
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	24.00	\$ 1,463.62
Plastic Filter Fabric (SY)	\$ 5.72	24.00	\$ 137.38
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 7,851.23

Construction Cost Total \$ 142,675.49

Traffic Control (8% of Construction Total \$) \$ 11,414.04

Construction Cost Grand Total \$ 154,089.53

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	75.00	\$ 7,425.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	75.00	\$ 8,250.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 26,400.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	7,500.00	\$ 30,000.00
<b>ROW Total</b>			<b>\$ 30,000.00</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>Heritage Way - South</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Urban typical section with valley gutter			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-10'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4		
<b>Existing Side Slopes</b>	flat		
<b>Existing Guardrail</b>	none		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	4		
<b>Pipe Type and Size</b>	48" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	48", RCP, 200' length		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$14,604	
<b>Right of Way Cost</b>	Assuming 7,500 sf outside of ROW	\$30,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$26,400	
<b>Construction Cost</b>	Applying 1/10 acre clearing and grubbing cost	\$96,035	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$177,039</b>	

Stage Construction Options	
<b>Close Location to Traffic</b>	X
<b>Maintain One Lane - No Temp Pavement</b>	
<b>Maintain One Lane - Temp Pavement</b>	

Stage Construction Notes: Close roadway;





**Photo 1:**



**Photo 2:**

Heritage Way - South

**Photo Date:**

7/2/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	120.00	\$ 672.64
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00		\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90		\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
<b>Subtotal</b>				<b>\$ 1,855.84</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 3,384.02

**Roadway Total \$ 5,239.86**

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	444.44	\$ 4,613.33
48" CMP (LF)	\$ 24.60		200.00	\$ 4,920.00
48" RCP (LF)		\$ 193.20	200.00	\$ 38,640.00
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	44.44	\$ 2,160.00
Trench Backfill (CY)		\$ 2.99	404.69	\$ 1,209.22
Trench Compaction (CY)		\$ 6.36	323.75	\$ 2,059.08

**Drainage Total \$65,824.61**

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

**Signing and Marking Total \$ -**

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

**Staging Total \$ 5,454.00**

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	120.00	\$ 527.04
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	800.00	\$ 3,388.80
Check Dam Type C Silt Fence (LF)	\$ 6.79	800.00	\$ 5,433.60
Erosion Control Mats (SY)	\$ 1.87	266.67	\$ 499.20
Landscape Mulch (SY)	\$ 3.58	266.67	\$ 953.60
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	24.00	\$ 1,463.62
Plastic Filter Fabric (SY)	\$ 5.72	24.00	\$ 137.38
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

**Erosion Control Total \$12,403.23**

**Construction Cost Total \$88,921.71**

Traffic Control (8% of Construction Total \$) \$ 7,113.74

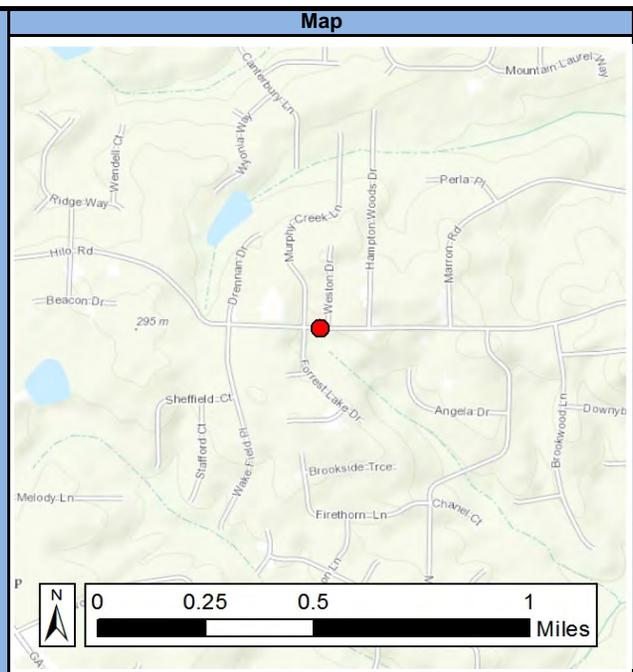
**Construction Cost Grand Total \$96,035.45**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	75.00	\$ 7,425.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	75.00	\$ 8,250.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$26,400.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	7,500.00	\$30,000.00
<b>ROW Total</b>			<b>\$30,000.00</b>



General Information	
Project ID	
Street Name	287 Hilo Road
Site Visit Date	1/20/2016
Road Classification	Minor arterial
Project Notes	
Existing upstream inlet consists of makeshift corrugated metal headwall.	
Field Notes	
Design (Existing Site Features)	
Existing Road Laneage	3-12.5'
Existing Shld Width (paved and grass) (feet)	10'
Existing Side Slopes	4:1
Existing Guardrail	None
Depth fm Pavement to Top of Culvert (ft):	1.00
Pipe Type and Size	CMP 1-18" 1-24"
Pipe Condition (1-5) (1 is new)	3-4
Condition Notes: Two corrugated metal pipes 2.5' apart	
Pavement Type/Condition	Asphalt/Good
Environmental Features	
Wetlands	
Ditches	Roadside drainage ditches
State Waters	
Utilities (Visual Inspection)	
Electric	Aerial 50' away
Cable	Unknown
Phone	Aerial 50' away
Gas	Unknown
Water	Buried
Sewer	
Other	Fire Hydrant



Stage Construction Options	
Close Location to Traffic	
Maintain One Lane - No Temp Pavement	X
Maintain One Lane - Temp Pavement	

Stage Construction Notes:

Proposed Design	
Roadway Section	Typical
Culvert Size & Material	3 24" round RCPs with straight headwall. Cost of removing makeshift headwall include in pipe removal cost
Utility Relocations	Relocation of fire hydrant and water main
Guardrail Replacement	
Miscellaneous Features	

Planning Cost Estimate		
Type	Notes	Total
Design	Includes 10% of Construction Cost and surveying needs	\$9,322
Right of Way Cost	Project entirely within ROW	\$0
Utility Relocation Cost	Fire hydrant and water main	\$6,569
Construction Cost		\$43,217
Environmental Permits	Assuming minimal environmental permitting required	\$10,000

<b>Total Planning Estimate</b>	<b>\$69,108</b>
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**Photo 1:** Upstream end of culverts looking South towards Hilo Road.



**Photo 2:** Downstream end of culverts.

## Hilo Road

**Photo Date:**

1/20/2016

**Taken By:**

David Gibbs

**Page**

1

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	450.00	\$ 2,522.40
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	12.00	\$ 709.92
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 3,232.32</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 1,479.90</b>
<b>Roadway Total</b>				<b>\$ 4,712.22</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	179.11	\$ 1,859.17
24" CMP (LF)	\$ 16.38		134.00	\$ 6,584.76
24" RCP (LF)		\$ 54.00	186.00	\$ 10,044.00
Class A Conc (CY)		\$ 892.19	6.20	\$ 5,531.57
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	27.56	\$ 1,339.20
Trench Backfill (CY)		\$ 2.99	124.69	\$ 372.58
Trench Compaction (CY)		\$ 6.36	99.75	\$ 634.43
<b>Drainage Total</b>				<b>\$ 26,365.71</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	36.00	\$ 25.49
<b>Signing and Marking Total</b>				<b>\$ 25.49</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.05	\$ 513.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 4,966.49</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	32.67	\$ 143.47
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	248.00	\$ 1,050.53
Check Dam Type C Silt Fence (LF)		\$ 6.79	248.00	\$ 1,684.42
Erosion Control Mats (SY)		\$ 1.87	0.00	\$ -
Landscape Mulch (SY)		\$ 3.58	0.00	\$ -
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	16.00	\$ 975.74
Plastic Filter Fabric (SY)		\$ 5.72	16.00	\$ 91.58
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 3,945.74</b>
<b>Construction Cost Total</b>				<b>\$ 40,015.65</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 3,201.25</b>
<b>Construction Cost Grand Total</b>				<b>\$ 43,216.90</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	36.00	\$ 3,960.00
Relocate Fire Hydrant (EA)		\$ 2,609.22	1.00	\$ 2,609.22
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 6,569.22</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	0.00	\$ -
<b>ROW Total</b>				<b>\$ -</b>



General Information		Map	
Project ID			
Street Name	448 Inman Road		
Site Visit Date	2/4/2016		
Road Classification	Minor arterial		
<b>Project Notes</b>			
Gay Creek crossing. Substantial flow. Downstream roadside blowout has been refilled.			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)	6'		
Existing Side Slopes	2:1		
Existing Guardrail	N/A		
Depth fm Pavement to Top of Culvert (ft):	3'		
Pipe Type and Size	2-84" CMPs		
Pipe Condition (1-5) (1 is new)	3-4		
Rusted out bottoms.			
Pavement Type/Condition	Asphalt/Good		
<b>Environmental Features</b>			
Wetlands			
Ditches			
State Waters			
<b>Utilities (Visual Inspection)</b>			
Electric	Aerial		
Cable	Unknown		
Phone	Aerial		
Gas	Unknown		
Water	Unknown		
Sewer	Unknown		
Other	Unknown		
<b>Stage Construction Options</b>			
<b>Close Location to Traffic</b>			
Maintain One Lane - No Temp Pavement		X	
Maintain One Lane - Temp Pavement			
Stage Construction Notes: Aerial utility lines above potential staging area hang low, need relocating			
<b>Proposed Design</b>			
Roadway Section	Typical		
Culvert Size & Material	Double 7' x 6' barrel concrete box culvert		
Utility Relocations	Aerial electrical and phone wires, utility pole		
Guardrail Replacement	Suggest guardrails over crossing, none currently in place.		
Miscellaneous Features			
<b>Planning Cost Estimate</b>			
Type	Notes	Total	
Design	Includes 10% Construction cost and surveying needs	\$26,433	
Right of Way Cost	Assuming project lies entirely within ROW	\$0	
Utility Relocation Cost	Aerial phone and electric, utility pole	\$16,363	
Construction Cost		\$139,334	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$192,130</b>	





**Photo 1:** Upstream end of culvert looking East towards Inman Road.



**Photo 2:** Downstream end looking South towards North Bend Court.

## Inman Road

**Photo Date:**

2/4/2016

**Taken By:**

Christian Helfrich

**Page**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	384.00	\$ 2,152.45
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	64.00	\$ 3,454.46
End Anchorage (EA)		\$ 1,380.00	4.00	\$ 5,520.00
<b>Subtotal</b>				<b>\$ 11,126.91</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 5,581.49

Roadway Total \$ 16,708.41

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	239.56	\$ 2,486.59
84" CMP (LF)	\$ 63.00		77.00	\$ 14,553.00
84" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	78.22	\$ 69,790.07
Steel (lb)		\$ 1.42	7,504.95	\$ 10,627.01
Pipe Bedding (CY)		\$ 48.60	24.00	\$ 1,166.40
Trench Backfill (CY)		\$ 2.99	232.78	\$ 695.54
Trench Compaction (CY)		\$ 6.36	186.22	\$ 1,184.37

Drainage Total \$ 100,502.98

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	64.00	\$ 45.31

Signing and Marking Total \$ 45.31

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.15	\$ 1,539.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 6,057.62

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	199.11	\$ 874.50
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	154.00	\$ 652.34
Check Dam Type C Silt Fence (LF)	\$ 6.79	154.00	\$ 1,045.97
Erosion Control Mats (SY)	\$ 1.87	51.33	\$ 96.10
Landscape Mulch (SY)	\$ 3.58	51.33	\$ 183.57
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	42.67	\$ 2,601.98
Plastic Filter Fabric (SY)	\$ 5.72	42.67	\$ 244.22
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 5,698.68

Construction Cost Total \$ 129,013.00

Traffic Control (8% of Construction Total \$) \$ 10,321.04

Construction Cost Grand Total \$ 139,334.04

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	150.00	\$ 9,900.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50	150.00	\$ 5,775.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 16,362.50</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	0.00	\$ -
<b>ROW Total</b>			<b>\$ -</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>510 Janice Drive</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Internal Local		
<b>Project Notes</b>			
Rural Typical Section			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2 - 10'		
<b>Existing Shld Width (paved and grass) (feet)</b>	1' (Grass)		
<b>Existing Side Slopes</b>	6:1		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	2		
<b>Pipe Type and Size</b>	1 - 60" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3		
Condition Notes: Signs of rust, but no evidence of structural loss; downstream debris potentially limiting capacity - maintenance to clear debris			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>2 Streams</b>			
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Aerial		
<b>Cable</b>	Aerial		
<b>Phone</b>	Aerial		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Stage Construction Options</b>			
<b>Close Location to Traffic</b>			
<b>Maintain One Lane - No Temp Pavement</b>		X	
<b>Maintain One Lane - Temp Pavement</b>			
Stage Construction Notes: Stage Construction to have one lane open			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	double 6' x 4' box, concrete, 70' length		
<b>Utility Relocations</b>	Water main and possible aerial facility relocation		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>	Zone A, Floodplain Analysis Required		
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Description</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$25,547	
<b>Right of Way Cost</b>	Assuming project extends 2,500 sf beyond ROW	\$10,000	
<b>Utility Relocation Cost</b>	Aerial and buried utilities	\$15,455	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$130,470	
<b>Environmental Permits</b>	Permits, Zone A Floodplain Analysis	\$15,000	
<b>Total Planning Estimate</b>		<b>\$196,472</b>	



**Photo 1:**



**Photo 2:**

Janice Drive

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Janice Drive

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	280.00	\$ 1,569.49
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 1,569.49</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 5,202.98</b>
<b>Roadway Total</b>				<b>\$ 6,772.47</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	290.37	\$ 3,014.04
60" CMP (LF)	\$ 24.60		70.00	\$ 5,166.00
60" RCP		\$ 259.20	0.00	\$ -
Class A Conc (CY)		\$ 892.19	86.48	\$ 77,156.42
Steel (lb)		\$ 1.42	9,154.00	\$ 12,962.06
Pipe Bedding (CY)		\$ 48.60	37.30	\$ 1,812.78
Trench Backfill (CY)		\$ 2.99	294.55	\$ 880.12
Trench Compaction (CY)		\$ 6.36	235.64	\$ 1,498.68
<b>Drainage Total</b>				<b>\$ 102,490.11</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	77.78	\$ 341.60
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	280.00	\$ 1,186.08
Check Dam Type C Silt Fence (LF)		\$ 6.79	280.00	\$ 1,901.76
Erosion Control Mats (SY)		\$ 1.87	31.11	\$ 58.24
Landscape Mulch (SY)		\$ 3.58	31.11	\$ 111.25
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	37.33	\$ 2,276.74
Plastic Filter Fabric (SY)		\$ 5.72	37.33	\$ 213.70
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 6,089.37</b>
<b>Construction Cost Total</b>				<b>\$ 120,805.95</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 9,664.48</b>
<b>Construction Cost Grand Total</b>				<b>\$ 130,470.42</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	60.00	\$ 3,960.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Phone				
Aerial	\$ 11.00	\$ 27.50	60.00	\$ 2,310.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	60.00	\$ 2,310.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 15,455.00</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	2,500.00	\$ 10,000.00
<b>ROW Total</b>				<b>\$ 10,000.00</b>

General Information		Map	
Project ID			
Street Name	671 Kenwood Road		
Site Visit Date	1/21/2016		
Road Classification	Minor arterial		
Project Notes			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-11'		
Existing Shld Width (paved and grass) (feet)	2'		
Existing Side Slopes	1.5:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	10'		
Pipe Type and Size	60" CMP		
Pipe Condition (1-5) (1 is new)	4-5		
Condition Notes: Deformed/compressed (pipe size hard to determine). No headwalls. Washout on downstream side, water surface 2' below culvert			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands			
Ditches	Roadside drainage ditches		
State Waters			
Buried			
Electric	Aerial		
Cable	Buried		
Phone	Aerial		
Gas			
Water			
Sewer			
Other			
Stage Construction Options			
Close Location to Traffic			
Maintain One Lane - No Temp Pavement	X		
Maintain One Lane - Temp Pavement			
Stage Construction Notes: Utility pole and electricity meter boxes in possible construction staging area			
Proposed Design			
Roadway Section	Typical		
Culvert Size & Material	60" round RCP with straight headwalls		
Utility Relocations	Potential removal/replacement of utility pole and buried cable line		
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% of Construction Cost and surveying needs	\$11,280	
Right of Way Cost	Project assumed to be entirely in ROW	\$0	
Utility Relocation Cost	Potential removal/replacement	\$12,100	
Construction Cost		\$62,798	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$96,178</b>	





**Photo 1:** Upstream end of culvert looking South towards Kenwood Road.



**Photo 2:** Downstream end of culvert.

**Kenwood Road**

**Photo Date:**

1/21/2016

**Taken By:**

David Gibbs

**Page**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	154.00	\$ 863.22
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 863.22</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 2,127.89</b>
<b>Roadway Total</b>				<b>\$ 2,991.12</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	236.44	\$ 2,454.29
60" CMP (LF)	\$ 24.60		57.00	\$ 1,402.20
60" RCP (LF)		\$ 281.96	57.00	\$ 16,071.95
Class A Conc (CY)		\$ 892.19	21.58	\$ 19,253.42
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	14.78	\$ 718.20
Trench Backfill (CY)		\$ 2.99	222.22	\$ 663.98
Trench Compaction (CY)		\$ 6.36	177.77	\$ 1,130.63
<b>Drainage Total</b>				<b>\$ 41,694.67</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71		\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.20	\$ 2,052.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 6,480.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	27.22	\$ 119.56
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	456.00	\$ 1,931.62
Check Dam Type C Silt Fence (LF)		\$ 6.79	456.00	\$ 3,097.15
Erosion Control Mats (SY)		\$ 1.87	50.67	\$ 94.85
Landscape Mulch (SY)		\$ 3.58	50.67	\$ 181.18
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	23.33	\$ 1,422.96
Plastic Filter Fabric (SY)		\$ 5.72	23.33	\$ 133.56
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 6,980.88</b>
<b>Construction Cost Total</b>				<b>\$ 58,146.66</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 4,651.73</b>
<b>Construction Cost Grand Total</b>				<b>\$ 62,798.40</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	75.00	\$ 4,950.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50	75.00	\$ 2,887.50
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 12,100.00</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	0.00	\$ -
<b>ROW Total</b>				<b>\$ -</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>547 Kenwood Road</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor Arterial		
Project Notes			
Rural Typical Section			
Field Notes			
Design (Existing Site Features)			
<b>Existing Road Laneage</b>	2-12'		
<b>Existing Shld Width (paved and grass) (feet)</b>	None		
<b>Existing Side Slopes</b>	1:1		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	2		
<b>Pipe Type and Size</b>	96" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3		
Condition Notes: Rusted severely on upstream and downstream ends; 3' + drop on downstream end, interior structure ok, debris/maintenance needed			
<b>Pavement Type/Condition</b>	Asphalt/Good		
Environmental Features			
<b>Wetlands</b>	None		
<b>Ditches</b>	Noted		
Utilities (Visual Inspection)			
<b>Electric</b>	Aerial		
<b>Cable</b>	Aerial		
<b>Phone</b>	Aerial		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
Proposed Design			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	8' x 5' box, concrete, 80' length		
<b>Utility Relocations</b>			
<b>Guardrail Replacement</b>	Guardrail due to culvert and side slopes		
<b>Miscellaneous Features</b>			
Planning Cost Estimate			
Type	Notes	Total	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$22,646	
<b>Right of Way Cost</b>	Assuming project extends 7,500 sf beyond ROW	\$15,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$5,500	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$176,464	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$229,611</b>	



**Photo 1:**



**Photo 2:**

Kenwood Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	432.00	\$ 2,421.50
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	500.00	\$ 26,988.00
End Anchorage (EA)		\$ 1,380.00	2.00	\$ 2,760.00
<b>Subtotal</b>				<b>\$ 32,169.50</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 7,142.00

Roadway Total \$ 39,311.51

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	586.67	\$ 6,089.60
96" CMP (LF)	\$ 72.00		80.00	\$ 17,280.00
96" RCP		\$ 142.52	0.00	\$ -
Class A Conc (CY)		\$ 892.19	74.23	\$ 66,230.68
Steel (lb)		\$ 1.42	9,406.00	\$ 13,318.90
Pipe Bedding (CY)		\$ 48.60	54.70	\$ 2,658.42
Trench Backfill (CY)		\$ 2.99	630.63	\$ 1,884.33
Trench Compaction (CY)		\$ 6.36	504.51	\$ 3,208.66

Drainage Total \$ 110,670.59

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	72.00	\$ 50.98

Signing and Marking Total \$ 50.98

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,555.95

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	112.00	\$ 491.90
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	320.00	\$ 1,355.52
Check Dam Type C Silt Fence (LF)	\$ 6.79	320.00	\$ 2,173.44
Erosion Control Mats (SY)	\$ 1.87	106.67	\$ 199.68
Landscape Mulch (SY)	\$ 3.58	106.67	\$ 381.44
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	48.00	\$ 2,927.23
Plastic Filter Fabric (SY)	\$ 5.72	48.00	\$ 274.75
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 7,803.97

Construction Cost Total \$ 163,393.00

Traffic Control (8% of Construction Total \$) \$ 13,071.44

Construction Cost Grand Total \$ 176,464.44

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 5,500.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	3,750.00	\$ 15,000.00
<b>ROW Total</b>			<b>\$ 15,000.00</b>



General Information		Map	
Project ID			
Street Name	200 Kingswood Drive		
Site Visit Date	1/20/2016		
Road Classification	Minor road		
Project Notes			
Field Notes			
<b>Design (Existing Site Features)</b>			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)	12'		
Existing Side Slopes	8:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	4.5'		
Pipe Type and Size	48" CMP		
Pipe Condition (1-5) (1 is new)	4-5		
Condition Notes: Rusted out bottoms. Concrete headwall and sluice/exaggerated inlet			
Pavement Type/Condition	Asphalt/Good		
<b>Environmental Features</b>			
Wetlands			
Ditches	Roadside drainage ditches		
State Waters			
<b>Utilities (Visual Inspection)</b>			
Electric	Unknown		
Cable	Buried		
Phone	Unknown		
Gas	Unknown		
Water	Buried		
Sewer	Unknown		
Other			
<b>Stage Construction Options</b>			
Close Location to Traffic			
Maintain One Lane - No Temp Pavement		X	
Maintain One Lane - Temp Pavement			
Stage Construction Notes:			
<b>Proposed Design</b>			
Roadway Section	Typical		
Culvert Size & Material	48" round RCP with straight headwalls. Cost of removing each existing headwall and small spillway equal to removal of entire length of pipe.		
Utility Relocations	Removal/replacement of fire hydrand and buried water, cable lines		
Guardrail Replacement			
Miscellaneous Features			
<b>Planning Cost Estimate</b>			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$11,512	
Right of Way Cost	Assume project extends past ROW, 1/10 acre	\$17,424	
Utility Relocation Cost		\$11,684	
Construction Cost		\$65,122	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$115,742</b>	





**Photo 1:** Upstream end of culvert.



**Photo 2:** Downstream end of culvert looking North towards Kingswood Drive.

**Kingswood Drive**

**Photo Date:**

1/20/2016

**Taken By:**

David Gibbs

**Page**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	144.00	\$ 807.17
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 807.17</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 2,209.38

Roadway Total \$ 3,016.54

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	194.22	\$ 2,016.03
48" CMP (LF)	\$ 24.60		368.00	\$ 9,052.80
48" RCP (LF)		\$ 193.20	92.00	\$ 17,774.40
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	20.44	\$ 993.60
Trench Backfill (CY)		\$ 2.99	163.51	\$ 488.58
Trench Compaction (CY)		\$ 6.36	130.81	\$ 831.96

Drainage Total \$ 43,380.35

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71		\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.20	\$ 2,052.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 6,480.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	45.33	\$ 199.10
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	552.00	\$ 2,338.27
Check Dam Type C Silt Fence (LF)	\$ 6.79	552.00	\$ 3,749.18
Erosion Control Mats (SY)	\$ 1.87	61.33	\$ 114.82
Landscape Mulch (SY)	\$ 3.58	61.33	\$ 219.33
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	12.00	\$ 731.81
Plastic Filter Fabric (SY)	\$ 5.72	12.00	\$ 68.69
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 7,421.20

Construction Cost Total \$ 60,298.09

Traffic Control (8% of Construction Total \$) \$ 4,823.85

Construction Cost Grand Total \$ 65,121.94

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22	1.00	\$ 2,609.22
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 11,684.22</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	4356.00	\$ 17,424.00
<b>ROW Total</b>			<b>\$ 17,424.00</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>115 Mark Lane</b>		
<b>Site Visit Date</b>	5/22/13		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Urban typical with Curb and Gutter			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2 - 10'		
<b>Existing Shld Width (paved and grass) (feet)</b>	4'		
<b>Existing Side Slopes</b>	Flat		
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	5		
<b>Pipe Type and Size</b>	60" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	4		
Condition Notes: Not straight, joint damage; downstream sediment (1/2' of sediment 90' length)			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	X (Upstream)		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Buried		
<b>Gas</b>			
<b>Water</b>	Buried		
<b>Sewer</b>			
<b>Other</b>			
<b>Stage Construction Options</b>			
<b>Close Location to Traffic</b>			
<b>Maintain One Lane - No Temp Pavement</b>		X	
<b>Maintain One Lane - Temp Pavement</b>			
Stage Construction Notes:			
<b>Proposed Design</b>			
<b>Roadway Section</b>			
<b>Culvert Size &amp; Material</b>	Double 6x4' box, concrete, 90'		
<b>Utility Relocations</b>	Electric, cable, phone, water		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$30,040	
<b>Right of Way Cost</b>	Assuming project extends 4,000 sf beyond ROW	\$16,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$17,600	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$175,397	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$249,037</b>	



**Photo 1:**



**Photo 2:**

Mark Lane

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Mark Lane

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	280.00	\$ 1,569.49
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	56.00	\$ 3,312.96
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 10,882.45</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 7,106.65

Roadway Total \$ 17,989.10

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	513.33	\$ 5,328.40
60" CMP (LF)	\$ 24.60		90.00	\$ 6,642.00
60" RCP		\$ 259.20	0.00	\$ -
Class A Conc (CY)		\$ 892.19	107.46	\$ 95,874.52
Steel (lb)		\$ 1.42	11,682.00	\$ 16,541.71
Pipe Bedding (CY)		\$ 48.60	47.70	\$ 2,318.22
Trench Backfill (CY)		\$ 2.99	562.86	\$ 1,681.81
Trench Compaction (CY)		\$ 6.36	450.28	\$ 2,863.81

Drainage Total \$ 131,250.48

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	56.00	\$ 39.65

Signing and Marking Total \$ 39.65

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,533.30

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	108.89	\$ 478.24
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	360.00	\$ 1,524.96
Check Dam Type C Silt Fence (LF)	\$ 6.79	360.00	\$ 2,445.12
Erosion Control Mats (SY)	\$ 1.87	120.00	\$ 224.64
Landscape Mulch (SY)	\$ 3.58	120.00	\$ 429.12
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	37.33	\$ 2,276.74
Plastic Filter Fabric (SY)	\$ 5.72	37.33	\$ 213.70
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 7,592.51

Construction Cost Total \$ 162,405.03

Traffic Control (8% of Construction Total \$) \$ 12,992.40

Construction Cost Grand Total \$ 175,397.43

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 17,600.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	4,000.00	\$ 16,000.00
<b>ROW Total</b>			<b>\$ 16,000.00</b>

General Information		Map	
Project ID			
Street Name	130 Mathew Way		
Site Visit Date	5/22/13		
Road Classification	Internal Local		
Project Notes			
Urban typical with Curb and Gutter			
Field Notes			
Design (Existing Site Features)			
Existing Road Laneage	2-10'		
Existing Shld Width (paved and grass) (feet)	6'		
Existing Side Slopes	Flat		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	4		
Pipe Type and Size	72" CMP		
Pipe Condition (1-5) (1 is new)	4		
Condition Notes: Pipe separated from headwall; Stream parallel to road			
Pavement Type/Condition	Asphalt/Good		
Environmental Features			
Wetlands	Yes		
Ditches	None		
Utilities (Visual Inspection)			
Electric	Buried		
Cable	Buried		
Phone	Buried		
Gas			
Water	Buried		
Sewer			
Other	Street Light above structure		
Proposed Design			
Roadway Section			
Culvert Size & Material	dbl 9' x 4' box, concrete, 80' length. Assuming cost of headwall removal is equal to half of removing entire length of pipe		
Utility Relocations	Street Light above structure, electric, cable, phone, water. Applying cost of electric utility wooden pole to remove street light.		
Guardrail Replacement			
Miscellaneous Features			
Planning Cost Estimate			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$37,375	
Right of Way Cost	Assuming project extends 2,100 sf beyond ROW	\$8,400	
Utility Relocation Cost	Buried utilities	\$18,288	
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$248,747	
Environmental Permits	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$322,809</b>	



**Photo 1:**

**Mathew Way**



**Photo 2:**

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

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**Photo 3:**



**Photo 4:**

**Mathew Way**

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	400.00	\$ 2,242.13
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 4,608.53</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 10,314.95

Roadway Total \$ 14,923.48

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	651.85	\$ 6,766.22
72" CMP (LF)	\$ 54.00		120.00	\$ 19,440.00
72" RCP		\$ 390.00	0.00	\$ -
Class A Conc (CY)		\$ 892.19	159.95	\$ 142,705.47
Steel (lb)		\$ 1.42	17,018.00	\$ 24,097.49
Pipe Bedding (CY)		\$ 48.60	60.70	\$ 2,950.02
Trench Backfill (CY)		\$ 2.99	709.67	\$ 2,120.50
Trench Compaction (CY)		\$ 6.36	567.74	\$ 3,610.80

Drainage Total \$ 201,690.50

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	1.00	\$ 4,428.00

Staging Total \$ 5,454.00

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	133.33	\$ 585.60
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	320.00	\$ 1,355.52
Check Dam Type C Silt Fence (LF)	\$ 6.79	320.00	\$ 2,173.44
Erosion Control Mats (SY)	\$ 1.87	106.67	\$ 199.68
Landscape Mulch (SY)	\$ 3.58	106.67	\$ 381.44
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	53.33	\$ 3,252.48
Plastic Filter Fabric (SY)	\$ 5.72	53.33	\$ 305.28
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 8,253.44

Construction Cost Total \$ 230,321.42

Traffic Control (8% of Construction Total \$) \$ 18,425.71

Construction Cost Grand Total \$ 248,747.14

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 18,287.50</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	2,100.00	\$ 8,400.00
<b>ROW Total</b>			<b>\$ 8,400.00</b>





**Photo 1:** Upstream end of culvert.



**Photo 2:** Downstream end of culvert looking northwest towards Merrydale Drive.

**330 Merrydale Drive**

**Photo Date:**

1/20/2016

**Taken By:**

David Gibbs

**Page**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	161.00	\$ 902.46
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 902.46</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 2,720.19</b>
<b>Roadway Total</b>				<b>\$ 3,622.65</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	342.22	\$ 3,552.27
60" CMP (LF)	\$ 24.60		88.00	\$ 2,164.80
60" RCP (LF)		\$ 281.96	88.00	\$ 24,812.83
Class A Conc (CY)		\$ 892.19	21.58	\$ 19,253.42
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	22.81	\$ 1,108.80
Trench Backfill (CY)		\$ 2.99	323.08	\$ 965.36
Trench Compaction (CY)		\$ 6.36	258.46	\$ 1,643.82
<b>Drainage Total</b>				<b>\$53,501.30</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71		\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.15	\$ 1,539.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,967.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	50.56	\$ 222.04
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	352.00	\$ 1,491.07
Check Dam Type C Silt Fence (LF)		\$ 6.79	352.00	\$ 2,390.78
Erosion Control Mats (SY)		\$ 1.87	0.00	\$ -
Landscape Mulch (SY)		\$ 3.58	0.00	\$ -
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	9.33	\$ 569.18
Plastic Filter Fabric (SY)		\$ 5.72	9.33	\$ 53.42
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 4,726.50</b>
<b>Construction Cost Total</b>				<b>\$67,817.45</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 5,425.40</b>
<b>Construction Cost Grand Total</b>				<b>\$73,242.85</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	100.00	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$14,712.50</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	0.00	\$ -
<b>ROW Total</b>				<b>\$ -</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	145 Millers Oak Way		
<b>Site Visit Date</b>	2/4/2016		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Almost entire project lies outside of ROW on private parcels. Culvert path passes under private driveway for approximately 40'; owners will need to be accommodated.			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-10		
<b>Existing Shld Width (paved and grass) (feet)</b>	2'		
<b>Existing Side Slopes</b>	40:1-30:1		
<b>Existing Guardrail</b>	N/A		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	1.25'		
<b>Pipe Type and Size</b>	24" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3-4		
Rusted, heavy debris buildup.			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>			
<b>Ditches</b>			
<b>State Waters</b>			
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Buried		
<b>Cable</b>	Buried		
<b>Phone</b>	Unknown		
<b>Gas</b>	Unknown		
<b>Water</b>	Unknown		
<b>Sewer</b>	Unknown		
<b>Other</b>	Unknown		
<b>Stage Construction Options</b>			
<b>Close Location to Traffic</b>			
<b>Maintain One Lane - No Temp Pavement</b>		X	
<b>Maintain One Lane - Temp Pavement</b>			
Stage Construction Notes: Lampost and electrical box in potential culvert path, upstream side of street. Cable box on downstream side of street.			
<b>Proposed Design</b>			
<b>Roadway Section</b>	Typical		
<b>Culvert Size &amp; Material</b>	36" round RCP with straight headwalls. Additional excavation and grading required to lower upstream inlet by 1' for upsizing purposes. Length of installed pipe may be 10-15' shorter for proper headwall installation downstream (Photo 2)		
<b>Utility Relocations</b>	Lampost (costed as utility pole), electric utility box (costed as utility pole), and buried electric and cable wires		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>			
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction cost and surveying needs	\$16,401	
<b>Right of Way Cost</b>	Assuming project extends beyond ROW, 1/4 acre	\$43,560	
<b>Utility Relocation Cost</b>	Buried electric and cable, utility box, lampost	\$18,425	
<b>Construction Cost</b>		\$114,014	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$202,401</b>	





**Photo 1:** Upstream end of culvert looking North towards Millers Oak Way.



**Photo 2:** Downstream end looking North towards Millers Oak Way.

**145 Millers Oak Way**

**Photo Date:**

2/4/2016

**Taken By:**

Christian Helfrich

**Page**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	115.00	\$ 644.61
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	22.22	\$ 1,121.33
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 10,132.35</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 4,493.50</b>
<b>Roadway Total</b>				<b>\$ 14,625.84</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	566.48	\$ 5,880.08
24" CMP (LF)	\$ 16.38		342.00	\$ 16,805.88
36" RCP (LF)		\$ 134.40	322.00	\$ 43,276.80
Class A Conc (CY)		\$ 892.19	7.20	\$ 6,423.75
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	59.63	\$ 2,898.00
Trench Backfill (CY)		\$ 2.99	551.40	\$ 1,647.57
Trench Compaction (CY)		\$ 6.36	441.12	\$ 2,805.50
<b>Drainage Total</b>				<b>\$ 79,737.58</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.20	\$ 2,052.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 6,480.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	166.11	\$ 729.56
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	322.00	\$ 1,363.99
Check Dam Type C Silt Fence (LF)		\$ 6.79	322.00	\$ 2,187.02
Erosion Control Mats (SY)		\$ 1.87	0.00	\$ -
Landscape Mulch (SY)		\$ 3.58	0.00	\$ -
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	6.67	\$ 406.56
Plastic Filter Fabric (SY)		\$ 5.72	6.67	\$ 38.16
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 4,725.30</b>
<b>Construction Cost Total</b>				<b>\$ 105,568.72</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 8,445.50</b>
<b>Construction Cost Grand Total</b>				<b>\$ 114,014.21</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	100.00	\$ 9,900.00
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	100.00	\$ 7,150.00
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 18,425.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	10890.00	\$ 43,560.00	
<b>ROW Total</b>			<b>\$ 43,560.00</b>	



General Information		Map							
Project ID									
Street Name	420 North Drive								
Site Visit Date	5/22/13								
Road Classification	Internal Local								
Project Notes									
Urban typical with Valley gutter									
Field Notes									
Design (Existing Site Features)									
Existing Road Laneage	2-11'								
Existing Shld Width (paved and grass) (feet)	6'								
Existing Side Slopes	flat								
Existing Guardrail	none								
Depth fm Pavement to Top of Culvert (ft):	5								
Pipe Type and Size	60" CMP, 80'								
Pipe Condition (1-5) (1 is new)	3								
Condition Notes: No headwall; signs of sag towards downstream end, sediment approximately 1" deep									
Pavement Type/Condition	Asphalt/Good								
Environmental Features		<b>Stage Construction Options</b> <table border="1"> <tr> <td>Close Location to Traffic</td> <td>X</td> </tr> <tr> <td>Maintain One Lane - No Temp Pavement</td> <td></td> </tr> <tr> <td>Maintain One Lane - Temp Pavement</td> <td></td> </tr> </table>		Close Location to Traffic	X	Maintain One Lane - No Temp Pavement		Maintain One Lane - Temp Pavement	
Close Location to Traffic	X								
Maintain One Lane - No Temp Pavement									
Maintain One Lane - Temp Pavement									
Wetlands	None	Stage Construction Notes: 							
Ditches	None								
Utilities (Visual Inspection)									
Electric	Buried								
Cable	Buried								
Phone	Buried								
Gas									
Water	Buried								
Sewer									
Other									
<b>Proposed Design</b>									
Roadway Section									
Culvert Size & Material	5' x 4' box, concrete, 80'								
Utility Relocations	Street light near structure, electric, cable, phone, water. Applying cost of electric utility wooden pole removal for street light.								
Guardrail Replacement									
Miscellaneous Features									
<b>Planning Cost Estimate</b>									
Type	Notes	Total							
Design	Includes 10% Construction Cost and surveying needs	\$13,230							
Right of Way Cost	Assuming project extends 3,000 sf beyond ROW	\$12,000							
Utility Relocation Cost	Buried utilities	\$14,768							
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$82,295							
Environmental Permits	Assuming minimal environmental permitting required	\$10,000							
<b>Total Planning Estimate</b>		<b>\$132,292</b>							



**Photo 1:**



**Photo 2:**

420 North Drive

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

420 North Drive

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	154.00	\$ 863.22
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 2,046.42</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 3,394.65</b>
<b>Roadway Total</b>				<b>\$ 5,441.07</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	228.15	\$ 2,368.18
60" CMP (LF)	\$ 24.60		80.00	\$ 5,904.00
60" RCP		\$ 259.20	0.00	\$ -
Class A Conc (CY)		\$ 892.19	53.51	\$ 47,740.98
Steel (lb)		\$ 1.42	4,806.00	\$ 6,805.30
Pipe Bedding (CY)		\$ 48.60	21.30	\$ 1,035.18
Trench Backfill (CY)		\$ 2.99	246.77	\$ 737.36
Trench Compaction (CY)		\$ 6.36	197.42	\$ 1,255.59
<b>Drainage Total</b>				<b>\$ 65,846.58</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	45.11	\$ 198.13
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	320.00	\$ 1,355.52
Check Dam Type C Silt Fence (LF)		\$ 6.79	320.00	\$ 2,173.44
Erosion Control Mats (SY)		\$ 1.87	106.67	\$ 199.68
Landscape Mulch (SY)		\$ 3.58	106.67	\$ 381.44
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	18.67	\$ 1,138.37
Plastic Filter Fabric (SY)		\$ 5.72	18.67	\$ 106.85
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 5,553.42</b>
<b>Construction Cost Total</b>				<b>\$ 82,295.08</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 6,583.61</b>
<b>Construction Cost Grand Total</b>				<b>\$ 88,878.68</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	40.00	\$ 3,960.00
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	40.00	\$ 2,860.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	40.00	\$ 2,860.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	40.00	\$ 4,400.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 14,767.50</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	3,000.00	\$ 12,000.00
<b>ROW Total</b>				<b>\$ 12,000.00</b>

General Information		
<b>Project ID</b>		
<b>Street Name</b>	<b>290 Oak Street</b>	
<b>Site Visit Date</b>	1/21/2016	
<b>Road Classification</b>	Minor road	
Project Notes		
Major blowout near private driveway culvert 15' x 5', exposed utility lines		
Field Notes		
Design (Existing Site Features)		
<b>Existing Road Laneage</b>	2-11'	
<b>Existing Shld Width (paved and grass) (feet)</b>	10'	
<b>Existing Side Slopes</b>	4:1	
<b>Existing Guardrail</b>	None	
<b>Depth fm Pavement to Top of Culvert (ft):</b>	5.00	
<b>Pipe Type and Size</b>	30" CMP	
<b>Pipe Condition (1-5) (1 is new)</b>	4-5	
Condition Notes: Rusted out bottom. No headwalls, surrounded by a lot of rip rap upstream side, also a roadside drainage pipe that empties at culvert. Major streambed/bank blowout downstream		
<b>Pavement Type/Condition</b>	Asphalt/Good	
Environmental Features		
<b>Wetlands</b>		
<b>Ditches</b>	Roadside drainage ditches	
<b>State Waters</b>		
Buried		
<b>Electric</b>	Aerial	
<b>Cable</b>	Unknown	
<b>Phone</b>	Aerial	
<b>Gas</b>	Unknown	
<b>Water</b>	Unknown	
<b>Sewer</b>	Unknown	
<b>Other</b>		
Proposed Design		
<b>Roadway Section</b>	Typical	
<b>Culvert Size &amp; Material</b>	42" round RCP with straight headwalls	
<b>Utility Relocations</b>	Relocation of utility pole, aerial wires	
<b>Guardrail Replacement</b>		
<b>Miscellaneous Features</b>	Major blowout near private driveway culvert that contributes to upstream end of culvert. 15' x 5' hole with exposed utilities	
Planning Cost Estimate		
<b>Type</b>	<b>Notes</b>	<b>Total</b>
<b>Design</b>	Includes 10% of Construction Cost and surveying needs	\$9,150
<b>Right of Way Cost</b>	Project assumed to be entirely in ROW	\$0
<b>Utility Relocation Cost</b>		\$5,913
<b>Construction Cost</b>		\$41,500
<b>Environmental Permits</b>	Minimal environmental permitting required	\$10,000
<b>Total Planning Estimate</b>		<b>\$66,563</b>

Map	
Stage Construction Options	
<b>Close Location to Traffic</b>	
<b>Maintain One Lane - No Temp Pavement</b>	<b>X</b>
<b>Maintain One Lane - Temp Pavement</b>	
Stage Construction Notes: <b>Utility pole within 10' of upstream culvert</b>	





**Photo 1:** Upstream end of culvert looking North towards Oak Street.



**Photo 2:** Downstream end of culvert.

**290 Oak Street**

**Photo Date:**

1/21/2016

**Taken By:**

David Gibbs

**Page**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	121.00	\$ 678.25
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 678.25</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 1,155.40</b>
<b>Roadway Total</b>				<b>\$ 1,833.64</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	123.85	\$ 1,285.58
30" CMP (LF)	\$ 19.66		64.00	\$ 1,257.98
42" RCP (LF)		\$ 142.52	64.00	\$ 9,121.54
Class A Conc (CY)		\$ 892.19	10.40	\$ 9,278.76
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	13.04	\$ 633.60
Trench Backfill (CY)		\$ 2.99	105.53	\$ 315.32
Trench Compaction (CY)		\$ 6.36	84.42	\$ 536.92
<b>Drainage Total</b>				<b>\$22,429.70</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71		\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.25	\$ 2,565.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 6,993.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	25.67	\$ 112.73
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	512.00	\$ 2,168.83
Check Dam Type C Silt Fence (LF)		\$ 6.79	512.00	\$ 3,477.50
Erosion Control Mats (SY)		\$ 1.87	56.89	\$ 106.50
Landscape Mulch (SY)		\$ 3.58	56.89	\$ 203.43
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	16.50	\$ 1,006.24
Plastic Filter Fabric (SY)		\$ 5.72	16.50	\$ 94.45
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 7,169.68</b>
<b>Construction Cost Total</b>				<b>\$38,426.02</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 3,074.08</b>
<b>Construction Cost Grand Total</b>				<b>\$41,500.10</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	50.00	\$ 3,300.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50	50.00	\$ 1,925.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 5,912.50</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	0.00	\$ -
<b>ROW Total</b>				<b>\$ -</b>



General Information		Map	
Project ID			
Street Name	220 Old Ivy		
Site Visit Date	1/20/2016		
Road Classification	Minor road		
<b>Project Notes</b>			
Culvert path is diagonal under a slight bend in road. Upstream inlet is a vertical concrete inlet that will need to be removed. Pedestrian dirt trail passes over downstream outlet near a children's playground			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
Existing Road Laneage	2-12.5'		
Existing Shld Width (paved and grass) (feet)	15'		
Existing Side Slopes	20:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	3'		
Pipe Type and Size	42" CMP		
Pipe Condition (1-5) (1 is new)	4		
Condition Notes: Rusted out bottom. Concrete headwall downstream.			
Pavement Type/Condition	Asphalt/Good		
<b>Environmental Features</b>		<b>Stage Construction Options</b>	
Wetlands		Close Location to Traffic	
Ditches		Maintain One Lane - No Temp Pavement	X
State Waters		Maintain One Lane - Temp Pavement	
		Stage Construction Notes:	
<b>Utilities (Visual Inspection)</b>			
Electric	Aerial		
Cable	Aerial		
Phone	Aerial		
Gas	Unknown		
Water	Buried		
Sewer	Unknown		
Other			
<b>Proposed Design</b>			
Roadway Section	Typical		
Culvert Size & Material	42" round RCP with straight headwalls. Removal of upstream vertical inlet costed as manhole removal. Cost of removing headwall assumed equal to removal of entire length of pipe.		
Utility Relocations			
Guardrail Replacement	Wooden fence posts for trail over downstream outlet removal/replacement costed as guardrails.		
Miscellaneous Features			
<b>Planning Cost Estimate</b>			
Type	Notes	Total	
Design	Includes 10% of Construction Cost and surveying needs	\$20,192	
Right of Way Cost	Project assumed to be entirely in ROW, County owned parcel	\$0	
Utility Relocation Cost	Possible water main removal/replacement	\$5,500	
Construction Cost		\$76,918	
Environmental Permits	Includes Zone A Floodway study	\$15,000	
<b>Total Planning Estimate</b>		<b>\$117,610</b>	



**Photo 1:** View from downstream end towards Old Ivy.



**Photo 2:** Upstream inlet looking West towards Old Ivy.

**220 Old Ivy**

**Photo Date:**

1/20/2016

**Taken By:**

David Gibbs

**Page**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	137.50	\$ 770.73
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	14.00	\$ 828.24
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	6.67	\$ 336.40
Guardrail (LF)	\$ 4.88	\$ 49.09	24.00	\$ 1,295.42
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 9,230.80</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 2,718.35</b>
<b>Roadway Total</b>				<b>\$ 11,949.14</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	289.26	\$ 3,002.51
Remove Manhole (EA)		\$ 2,069.81	1.00	\$ 2,069.81
42" CMP (LF)	\$ 24.60		284.00	\$ 6,986.40
42" RCP (LF)		\$ 142.52	142.00	\$ 20,238.41
Class A Conc (CY)		\$ 892.19	10.40	\$ 9,278.76
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	28.93	\$ 1,405.80
Trench Backfill (CY)		\$ 2.99	266.77	\$ 797.11
Trench Compaction (CY)		\$ 6.36	213.42	\$ 1,357.33
<b>Drainage Total</b>				<b>\$ 45,136.12</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71		\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.20	\$ 2,052.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 6,480.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	71.50	\$ 314.03
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	568.00	\$ 2,406.05
Check Dam Type C Silt Fence (LF)		\$ 6.79	568.00	\$ 3,857.86
Erosion Control Mats (SY)		\$ 1.87	63.11	\$ 118.14
Landscape Mulch (SY)		\$ 3.58	63.11	\$ 225.69
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	11.00	\$ 670.82
Plastic Filter Fabric (SY)		\$ 5.72	11.00	\$ 62.96
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 7,655.55</b>
<b>Construction Cost Total</b>				<b>\$ 71,220.81</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 5,697.66</b>
<b>Construction Cost Grand Total</b>				<b>\$ 76,918.48</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 5,500.00</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	0.00	\$ -
<b>ROW Total</b>				<b>\$ -</b>



General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	<b>190 Ponderosa Drive</b>		
<b>Site Visit Date</b>	Beverly Manor S/D		
<b>Road Classification</b>	Minor road		
<b>Project Notes</b>			
Replace 30-yr old CMP with RCP. Replace flumes with curb inlets and provide manhole access to pipe for inspection and maintenance. One of several pipe replacement projects in subdivision			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
<b>Existing Road Laneage</b>	2-13		
<b>Existing Shld Width (paved and grass) (feet)</b>	NA - curb & gutter		
<b>Existing Side Slopes</b>	NA - curb & gutter		
<b>Existing Guardrail</b>	NA - curb & gutter		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	Assumed 3'		
<b>Pipe Type and Size</b>	CMP, 48"		
<b>Pipe Condition (1-5) (1 is new)</b>	5		
Condition Notes: Pipe and associated structures are old and in poor condition			
<b>Pavement Type/Condition</b>	Average		
<b>Environmental Features</b>			
<b>Wetlands</b>	None		
<b>Ditches</b>	None		
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Yes		
<b>Cable</b>	Yes		
<b>Phone</b>	Yes		
<b>Gas</b>	Unknown		
<b>Water</b>	Yes		
<b>Sewer</b>	No		
<b>Other</b>			
<b>Stage Construction Options</b>			
<b>Close Location to Traffic</b>			
<b>Maintain One Lane - No Temp Pavement</b>		X	
<b>Maintain One Lane - Temp Pavement</b>			
Stage Construction Notes: Minimal impacts to traffic and access can be maintained to all properties.			
<b>Proposed Design</b>			
<b>Roadway Section</b>	Typical with curb and gutter. Road dimensions estimated with Google Earth.		
<b>Culvert Size &amp; Material</b>	Replace existing pipe with 48" RCP, approximately 40'. Cost of headwall removal assumed equal to removal of entire length of pipe.		
<b>Utility Relocations</b>	Buried utilities		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>	Previous inspection notes called for upgrading inlets, headwalls and junction boxes to modern design. Manhole access was not considered in this design		
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$9,691	
<b>Right of Way Cost</b>	Assuming project extends 5,000 sf beyond ROW	\$20,000	
<b>Utility Relocation Cost</b>	Buried utilities	\$17,600	
<b>Construction Cost</b>	Assuming 1/10 acre clearing and grubbing	\$46,912	
<b>Environmental Permits</b>	Assuming minimal environmental permitting required	\$10,000	
<b>Total Planning Estimate</b>		<b>\$104,203</b>	



**Photo 1:**



**Photo 2:**

**190 Ponderosa Drive**

**Photo Date:**

6/03/2013

**Taken By:**

Tony Hicks

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	156.00	\$ 874.43
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	40.00	\$ 2,366.40
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09		\$ -
End Anchorage (EA)		\$ 1,380.00		\$ -
<b>Subtotal</b>				<b>\$ 9,240.83</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 1,683.48</b>
<b>Roadway Total</b>				<b>\$ 10,924.32</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	71.11	\$ 738.13
48" CMP (LF)	\$ 24.60		120.00	\$ 2,952.00
48" RCP (LF)		\$ 193.20	40.00	\$ 7,728.00
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	8.89	\$ 432.00
Trench Backfill (CY)		\$ 2.99	44.05	\$ 131.62
Trench Compaction (CY)		\$ 6.36	35.24	\$ 224.13
<b>Drainage Total</b>				<b>\$ 24,428.86</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	9.33	\$ 40.99
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	160.00	\$ 677.76
Check Dam Type C Silt Fence (LF)		\$ 6.79	160.00	\$ 1,086.72
Erosion Control Mats (SY)		\$ 1.87	53.33	\$ 99.84
Landscape Mulch (SY)		\$ 3.58	53.33	\$ 190.72
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	8.00	\$ 487.87
Plastic Filter Fabric (SY)		\$ 5.72	8.00	\$ 45.79
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 2,629.70</b>
<b>Construction Cost Total</b>				<b>\$ 43,436.87</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 3,474.95</b>
<b>Construction Cost Grand Total</b>				<b>\$ 46,911.82</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50.00	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50.00	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 17,600.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	5,000.00	\$ 20,000.00	
<b>ROW Total</b>			<b>\$ 20,000.00</b>	



General Information		Map	
Project ID			
Street Name	125 Ridge Brook Court		
Site Visit Date	1/21/2016		
Road Classification	Minor road		
<b>Project Notes</b>			
CULVERT PASSES UNDER PRIVATE DRIVE (almost parallel). Owners need to be accommodated.			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
Existing Road Laneage	2-12'		
Existing Shld Width (paved and grass) (feet)	10'		
Existing Side Slopes	6:1		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	5'		
Pipe Type and Size	48" CMP		
Pipe Condition (1-5) (1 is new)	4-5		
Condition Notes: Rusted out bottoms, concrete headwalls. Separation of pipe from headwall opening. Small amount of rip rap at downstream end			
Pavement Type/Condition	Asphalt/Good		
<b>Environmental Features</b>			
Wetlands			
Ditches	Roadside drainage ditches		
State Waters			
<b>Buried</b>			
Electric	Aerial		
Cable	Unknown		
Phone	Aerial		
Gas	Unknown		
Water	Unknown		
Sewer	Unknown		
Other			
<b>Stage Construction Options</b>			
Close Location to Traffic			
Maintain One Lane - No Temp Pavement	X		
Maintain One Lane - Temp Pavement			
Stage Construction Notes:			
<b>Proposed Design</b>			
Roadway Section	Typical		
Culvert Size & Material	48" round RCP with straight headwalls. Cost of removing both existing headwalls assumed equal to the removal of the entire length of pipe.		
Utility Relocations			
Guardrail Replacement			
Miscellaneous Features	Private driveway removal and reconstruction costed as 4" concrete sidewalk.		
<b>Planning Cost Estimate</b>			
Type	Notes	Total	
Design	Includes 10% of Construction Cost and surveying needs	\$22,629	
Right of Way Cost	Assume project extends past ROW, 1/10 acre	\$17,424	
Utility Relocation Cost	None identified	\$0	
Construction Cost		\$101,289	
Environmental Permits	Includes Zone AE Floodway study	\$18,000	
<b>Total Planning Estimate</b>		<b>\$159,342</b>	





**Photo 1:** Upstream end of culvert.



**Photo 2:** Downstream end looking East towards Ridge Brook Court.

**125 Ridge Brook Court**

**Photo Date:**

1/21/2016

**Taken By:**

David Gibbs

**Page**

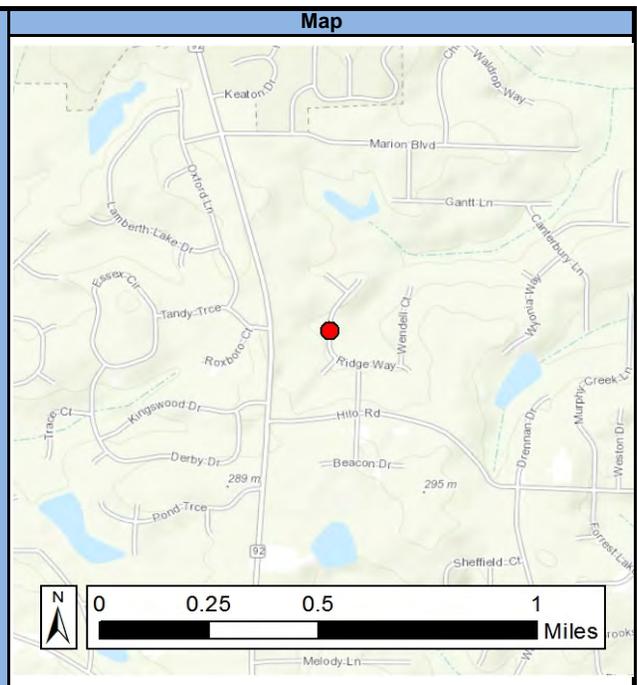
**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	144.00	\$ 807.17
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	52.00	\$ 3,076.32
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	70.00	\$ 3,532.20
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 13,415.69</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 3,801.20</b>
<b>Roadway Total</b>				<b>\$ 17,216.88</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	380.00	\$ 3,944.40
48" CMP (LF)	\$ 24.60		342.00	\$ 8,413.20
48" RCP (LF)		\$ 193.20	173.00	\$ 33,423.60
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	38.00	\$ 1,846.80
Trench Backfill (CY)		\$ 2.99	341.41	\$ 1,020.14
Trench Compaction (CY)		\$ 6.36	273.13	\$ 1,737.11
<b>Drainage Total</b>				<b>\$ 62,608.23</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71		\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,454.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	98.00	\$ 430.42
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	684.00	\$ 2,897.42
Check Dam Type C Silt Fence (LF)		\$ 6.79	684.00	\$ 4,645.73
Erosion Control Mats (SY)		\$ 1.87	0.00	\$ -
Landscape Mulch (SY)		\$ 3.58	0.00	\$ -
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	8.00	\$ 487.87
Plastic Filter Fabric (SY)		\$ 5.72	8.00	\$ 45.79
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 8,507.23</b>
<b>Construction Cost Total</b>				<b>\$ 93,786.34</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 7,502.91</b>
<b>Construction Cost Grand Total</b>				<b>\$ 101,289.25</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ -</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	4356.00	\$ 17,424.00
<b>ROW Total</b>				<b>\$ 17,424.00</b>



General Information	
Project ID	
Street Name	170 Ridge Way
Site Visit Date	1/20/2016
Road Classification	Minor road
Project Notes	
Water meter and gazebo near culvert path on downstream side.	
Field Notes	
Design (Existing Site Features)	
Existing Road Laneage	2-13'
Existing Shld Width (paved and grass) (feet)	100'
Existing Side Slopes	20:1
Existing Guardrail	None
Depth fm Pavement to Top of Culvert (ft):	4.5'
Pipe Type and Size	36" CMP
Pipe Condition (1-5) (1 is new)	4-5
Condition Notes: Rusted out bottom on downstream side. No headwall. MAJOR streambed blowout.	
Pavement Type/Condition	Asphalt/Good
Environmental Features	
Wetlands	
Ditches	
State Waters	
Utilities (Visual Inspection)	
Electric	Aerial
Cable	Unknown
Phone	Aerial
Gas	Unknown
Water	Buried
Sewer	Unknown
Other	



Stage Construction Options	
Close Location to Traffic	
Maintain One Lane - No Temp Pavement	X
Maintain One Lane - Temp Pavement	
Stage Construction Notes:	

Proposed Design	
Roadway Section	Typical
Culvert Size & Material	48" round RCP with straight headwalls
Utility Relocations	Utility pole and aerial wires need relocating. Possible water main relocation.
Guardrail Replacement	
Miscellaneous Features	

Planning Cost Estimate		
Type	Notes	Total
Design	Includes 10% of Construction Cost and surveying needs	\$18,959
Right of Way Cost	Assume project extends past ROW, 1/4 acre	\$43,560
Utility Relocation Cost	Utility pole and aerial wires, potential water main	\$16,638
Construction Cost		\$139,586
Environmental Permits	Assuming minimal environmental permitting required	\$10,000

<b>Total Planning Estimate</b>	<b>\$228,742</b>
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**Photo 1:** Upstream end of culvert.



**Photo 2:** Downstream end of culvert looking east towards Ridge Way.

## 170 Ridge Way

**Photo Date:**

1/20/2016

**Taken By:**

David Gibbs

**Page**

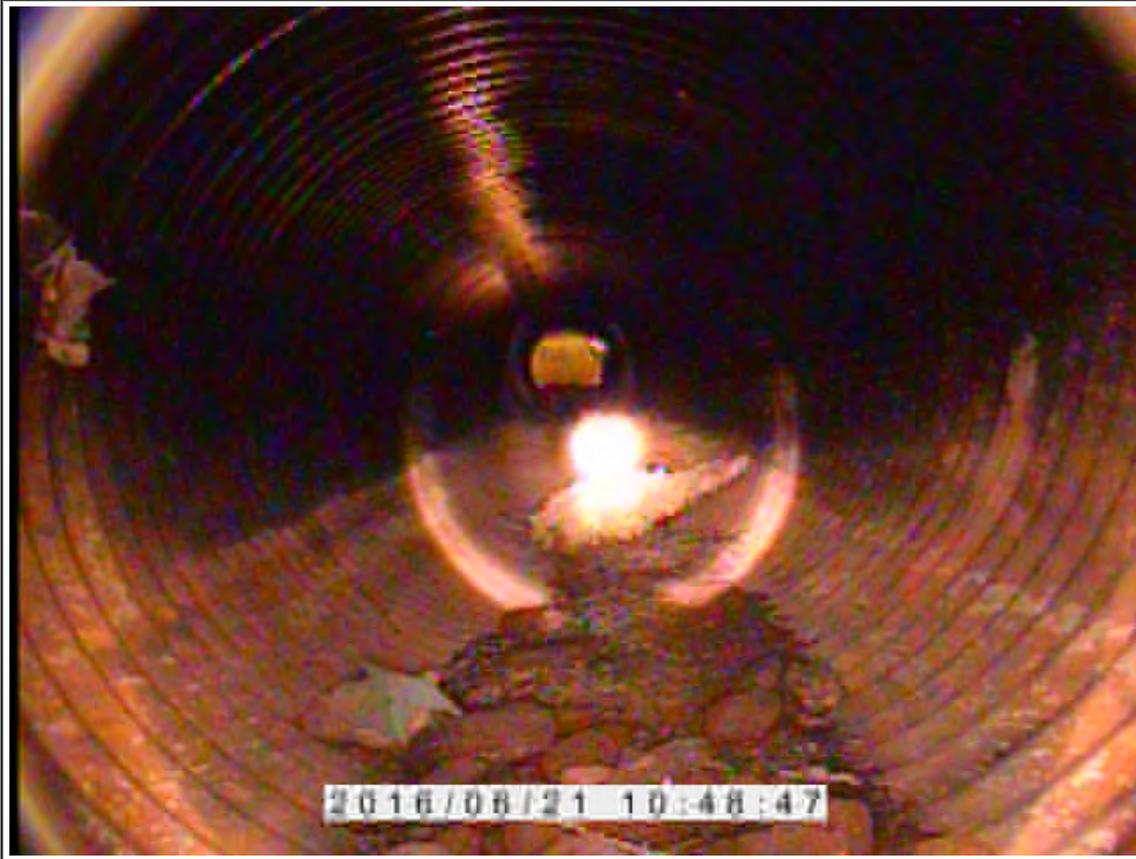
**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	156.00	\$ 874.43
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	52.00	\$ 3,076.32
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 9,950.75</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 5,367.75</b>
<b>Roadway Total</b>				<b>\$ 15,318.50</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	615.78	\$ 6,391.77
36" CMP (LF)	\$ 24.60		326.00	\$ 8,019.60
48" RCP (LF)		\$ 193.20	326.00	\$ 62,983.20
Class A Conc (CY)		\$ 892.19	13.70	\$ 12,222.98
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	72.44	\$ 3,520.80
Trench Backfill (CY)		\$ 2.99	528.22	\$ 1,578.31
Trench Compaction (CY)		\$ 6.36	422.57	\$ 2,687.57
<b>Drainage Total</b>				<b>\$ 97,404.23</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71		\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.25	\$ 2,565.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 6,993.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	200.00	\$ 878.40
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	652.00	\$ 2,761.87
Check Dam Type C Silt Fence (LF)		\$ 6.79	652.00	\$ 4,428.38
Erosion Control Mats (SY)		\$ 1.87	72.44	\$ 135.62
Landscape Mulch (SY)		\$ 3.58	72.44	\$ 259.06
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	16.00	\$ 975.74
Plastic Filter Fabric (SY)		\$ 5.72	16.00	\$ 91.58
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 9,530.66</b>
<b>Construction Cost Total</b>				<b>\$ 129,246.39</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 10,339.71</b>
<b>Construction Cost Grand Total</b>				<b>\$ 139,586.10</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	100.00	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	1.00	\$ 687.50
Phone				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	50.00	\$ 5,500.00
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 16,637.50</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	10890.00	\$ 43,560.00
<b>ROW Total</b>				<b>\$ 43,560.00</b>



General Information		Map	
Project ID			
Street Name	545 Ridgemont Drive		
Site Visit Date	5/21/13		
Road Classification	Minor road		
<b>Project Notes</b>			
Urban Typical Section with Valley Gutter			
<b>Field Notes</b>			
<b>Design (Existing Site Features)</b>			
Existing Road Laneage	2 - 12'		
Existing Shld Width (paved and grass) (feet)	None		
Existing Side Slopes	Flat		
Existing Guardrail	None		
Depth fm Pavement to Top of Culvert (ft):	4		
Pipe Type and Size	36" CMP, 290'		
Pipe Condition (1-5) (1 is new)	5		
Condition Notes:			
Pavement Type/Condition	Asphalt/Good		
<b>Environmental Features</b>		<b>Stage Construction Options</b>	
Wetlands	None	Close Location to Traffic	
Ditches	None	Maintain One Lane - No Temp Pavement	X
		Maintain One Lane - Temp Pavement	
		Stage Construction Notes:	
<b>Utilities (Visual Inspection)</b>			
Electric	Buried		
Cable	Buried		
Phone	Buried		
Gas			
Water	Buried		
Sewer			
Other			
<b>Proposed Design</b>			
Roadway Section			
Culvert Size & Material	36" RCP, 32 36" of HDPE, 260'.		
Utility Relocations	Electric, cable, phone, water		
Guardrail Replacement			
Miscellaneous Features			
<b>Planning Cost Estimate</b>			
Type	Notes	Total	
Design	Includes 10% Construction Cost and surveying needs	\$10,785	
Right of Way Cost	Assuming project extends 3,000 sf beyond ROW	\$20,800	
Utility Relocation Cost	Buried utilities	\$17,600	
Construction Cost	Assuming 1/10 acre clearing and grubbing	\$57,848	
Environmental Permits	Assuming minimal environmental permitting required	\$0	
<b>Total Planning Estimate</b>		<b>\$107,033</b>	



**Photo 1:**



**Photo 2:**

**545 Ridgemount**

**Photo Date:**

6/21/2016

**Taken By:**

Tony Hicks

**Page:**

**1**

**Roadway Construction, Utility Relocation and ROW Quantity Calculations**

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	144.00	\$ 807.17
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00	2.00	\$ 6,000.00
4" Sidewalk (SY)	13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	4.884	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
Subtotal				\$ 7,990.37

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 2,349.34

**Roadway Total \$ 10,339.71**

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	133.33	\$ 1,384.00
36" CMP (LF)	\$ 19.62		296.00	\$ 5,807.52
36" RCP		\$ 142.52	36.00	\$ 5,130.86
36" HPDE		\$ 114.02	200.00	\$ 22,803.84
Class A Conc (CY)		\$ 892.19	0.00	\$ -
Steel (lb)		\$ 1.42	0.00	\$ -
Pipe Bedding (CY)		\$ 48.60	22.70	\$ 1,103.22
Trench Backfill (CY)		\$ 2.99	296.00	\$ 884.45
Trench Compaction (CY)		\$ 6.36	296.00	\$ 1,882.56

**Drainage Total \$ 38,996.45**

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0	\$ -

**Signing and Marking Total \$ -**

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement			\$ 0
Temporary Drainage (Stream Diversion)	\$ 4,428.00	0.00	\$ -

**Staging Total \$ 1,026.00**

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	100.00	\$ 439.20
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	400.00	\$ 1,694.40
Check Dam Type C Silt Fence (LF)	\$ 6.79	0.00	\$ -
Erosion Control Mats (SY)	\$ 1.87	0.00	\$ -
Landscape Mulch (SY)	\$ 3.58	0.00	\$ -
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	16.00	\$ 975.74
Plastic Filter Fabric (SY)	\$ 5.72	16.00	\$ 91.58
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

**Erosion Control Total \$ 3,200.93**

**Construction Cost Total \$ 53,563.09**

**Traffic Control (8% of Construction Total \$) \$ 4,285.05**

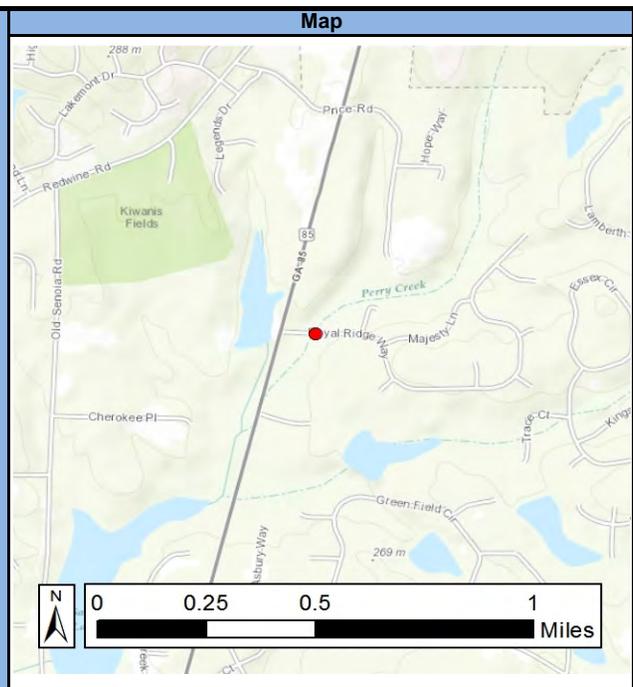
**Construction Cost Grand Total \$ 57,848.14**

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
<b>Electric</b>				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	50	\$ 4,950.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Phone</b>				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Cable</b>				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	50	\$ 3,575.00
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
<b>Gas</b>				
4" main	\$ 16.50	\$ 66.00		\$ -
<b>Water</b>				
8" main	\$ 16.50	\$ 93.50	50	\$ 5,500.00
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
<b>Sewer</b>				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 17,600.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	5200	\$ 20,800.00
<b>ROW Total</b>			<b>\$ 20,800.00</b>



General Information		
Project ID		
Street Name	Royal Ridge Way	
Site Visit Date	1/20/2016	
Road Classification	Minor road	
Project Notes		
Field Notes		
Design (Existing Site Features)		
Existing Road Laneage	2-11.5'	
Existing Shld Width (paved and grass) (feet)	5'	
Existing Side Slopes	3.5:1	
Existing Guardrail	None	
Depth fm Pavement to Top of Culvert (ft):	4'	
Pipe Type and Size	2-66" CMP	
Pipe Condition (1-5) (1 is new)	4	
Condition Notes: Two corrugated metal pipes about 1' apart. Filled with sediment. No headwalls		
Pavement Type/Condition	Asphalt/Good	
Environmental Features		
Wetlands		
Ditches	Roadside drainage ditches	
State Waters		
Buried		
Electric	Aerial	
Cable	Unknown	
Phone	Aerial	
Gas	Unknown	
Water	Unknown	
Sewer	Unknown	
Other		
Proposed Design		
Roadway Section	Typical, 18" concrete gutters	
Culvert Size & Material	Double 8' x 5' barrel box culvert with wingwalls	
Utility Relocations	Assuming utility pole safe distance from site (about 60')	
Guardrail Replacement		
Miscellaneous Features		
Planning Cost Estimate		
Type	Notes	Total
Design	Includes 10% of Construction Cost and surveying needs	\$29,198
Right of Way Cost	Assuming entire project within ROW	\$0
Utility Relocation Cost	Assuming not needed	\$0
Construction Cost		\$166,976
Environmental Permits	Includes Zone AE Floodway study	\$18,000
<b>Total Planning Estimate</b>		<b>\$214,174</b>



Stage Construction Options	
Close Location to Traffic	
Maintain One Lane - No Temp Pavement	X
Maintain One Lane - Temp Pavement	
Stage Construction Notes:	
Sediment buildup in existing pipes needs removal.	





**Photo 1:**



**Photo 2:**

**Royal Ridge Way**

**Photo Date:**

11/02/2015

**Taken By:**

Tony Hicks

**Page:**

**1**



**Photo 3:**



**Photo 4:**

Royal Ridge Way

**Photo Date:**

02/02/2016

**Taken By:**

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	468.00	\$ 2,623.30
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	36.00	\$ 2,129.76
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 4,753.06</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 6,839.26</b>
<b>Roadway Total</b>				<b>\$ 11,592.32</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	413.33	\$ 4,290.40
72" CMP	\$ 54.00		124.00	\$ 6,696.00
72" RCP		\$ 105.60	0.00	\$ -
Class A Conc (CY)		\$ 892.19	111.22	\$ 99,230.93
Steel (lb)		\$ 1.42	11533.80	\$ 16,331.86
Pipe Bedding (CY)		\$ 48.60	42.70	\$ 2,075.22
Trench Backfill (CY)		\$ 2.99	421.97	\$ 1,260.84
Trench Compaction (CY)		\$ 6.36	337.57	\$ 2,146.97
<b>Drainage Total</b>				<b>\$ 132,032.22</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	54.00	\$ 38.23
<b>Signing and Marking Total</b>				<b>\$ 38.23</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.10	\$ 1,026.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	1.00	\$ 4,428.00
<b>Staging Total</b>				<b>\$ 5,492.23</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	72.00	\$ 316.22
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	248.00	\$ 1,050.53
Check Dam Type C Silt Fence (LF)		\$ 6.79	248.00	\$ 1,684.42
Erosion Control Mats (SY)		\$ 1.87	0.00	\$ -
Landscape Mulch (SY)		\$ 3.58	0.00	\$ -
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	36.00	\$ 2,195.42
Plastic Filter Fabric (SY)		\$ 5.72	36.00	\$ 206.06
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 5,452.66</b>
<b>Construction Cost Total</b>				<b>\$ 154,607.66</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 12,368.61</b>
<b>Construction Cost Grand Total</b>				<b>\$ 166,976.27</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	0.00	\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	0.00	\$ -
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Gas				
4" main	\$ 16.50	\$ 66.00	0.00	\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22	0.00	\$ -
Sewer				
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ -</b>
Right of Way (Sq Ft)		Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement		\$ 4.00	0.00	\$ -
<b>ROW Total</b>				<b>\$ -</b>

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	120 Shoal Creek Rd.		
<b>Site Visit Date</b>	5/21/13		
<b>Road Classification</b>	Internal Local		
<b>Project Notes</b>			
Rural Typical Section			
<b>Field Notes</b>		<b>Stage Construction Options</b>	
<b>Design (Existing Site Features)</b>		<b>Close Location to Traffic</b>	
<b>Existing Road Laneage</b>	2-10'	<b>Maintain One Lane - No Temp Pavement</b>	X
<b>Existing Shld Width (paved and grass) (feet)</b>	2' Grass	<b>Maintain One Lane - Temp Pavement</b>	
<b>Existing Side Slopes</b>	2:1	Stage Construction Notes:	
<b>Existing Guardrail</b>	None		
<b>Depth fm Pavement to Top of Culvert (ft):</b>	3		
<b>Pipe Type and Size</b>	3-96" CMP		
<b>Pipe Condition (1-5) (1 is new)</b>	3		
Condition Notes:			
<b>Pavement Type/Condition</b>	Asphalt/Good		
<b>Environmental Features</b>			
<b>Wetlands</b>	Yes		
<b>Ditches</b>	None		
<b>Contrib. Stream (2)</b>			
<b>Utilities (Visual Inspection)</b>			
<b>Electric</b>	Aerial		
<b>Cable</b>	Buried		
<b>Phone</b>	Aerial		
<b>Gas</b>	None		
<b>Water</b>	None		
<b>Sewer</b>	None		
<b>Other</b>			
<b>Proposed Design</b>			
<b>Roadway Section</b>	Replace in kind		
<b>Proposed Design</b>	Triple 8' x 8' box culvert		
<b>Utility Relocations</b>	Telephone and Cable		
<b>Guardrail Replacement</b>	Guardrail may be needed based on culvert length		
<b>Miscellaneous Features</b>	Zone A, Floodplain Analysis Required		
<b>Planning Cost Estimate</b>			
<b>Type</b>	<b>Notes</b>	<b>Total</b>	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$42,264	
<b>Right of Way Cost</b>	Assuming project extends 3,750 sf beyond ROW	\$15,000	
<b>Utility Relocation Cost</b>	Buried phone and cable	\$10,725	
<b>Construction Cost</b>	1/3 acre clearing and grubbing, Guardrails	\$297,641	
<b>Environmental Permits</b>	Permits, Zone A Floodway Analysis	\$15,000	
<b>Total Planning Estimate</b>		<b>\$380,630.36</b>	



**Photo 1:**



**Photo 2:**

120 Shoal Creek Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**



**Photo 3:**



**Photo 4:**

120 Shoal Creek Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**2**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1,040.00	\$ 5,829.55
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	0.00	\$ -
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	104.00	\$ 5,613.50
End Anchorage (EA)		\$ 1,380.00	4.00	\$ 5,520.00
<b>Subtotal</b>				<b>\$ 16,963.05</b>

Grading Complete (5% of Rwy Items & Drng Total \$) \$ 11,996.39

Roadway Total \$ 28,959.44

Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	755.56	\$ 7,842.67
96" CMP (LF)	\$ 63.00		70.00	\$ 13,230.00
96" RCP		\$ 455.00	0.00	\$ -
Class A Conc (CY)		\$ 892.19	184.86	\$ 164,929.87
Steel (lb)		\$ 1.42	19,942.00	\$ 28,237.87
Pipe Bedding (CY)		\$ 48.60	50.10	\$ 2,434.86
Trench Backfill (CY)		\$ 2.99	778.79	\$ 2,327.02
Trench Compaction (CY)		\$ 6.36	623.03	\$ 3,962.48

Drainage Total \$ 222,964.77

Signing and Marking	Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)	\$ 0.71	0.00	\$ -

Signing and Marking Total \$ -

Staging	Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)	\$ 10,260.00	0.33	\$ 3,385.80
Temporary Pavement			\$ -
Temporary Drainage (Stream Diversion)	\$ 4,428.00	2.00	\$ 8,856.00

Staging Total \$ 12,241.80

Erosion Control	Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)	\$ 4.39	86.67	\$ 380.64
Temporary Grassing (AC)	\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)	\$ 4.24	500.00	\$ 2,118.00
Check Dam Type C Silt Fence (LF)	\$ 6.79	500.00	\$ 3,396.00
Erosion Control Mats (SY)	\$ 1.87	166.67	\$ 312.00
Landscape Mulch (SY)	\$ 3.58	166.67	\$ 596.00
Perm Grassing (AC)	\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)	\$ 60.98	69.33	\$ 4,228.22
Plastic Filter Fabric (SY)	\$ 5.72	69.33	\$ 396.86
4" Ditch Paving (SY)	\$ 54.65	0.00	\$ -

Erosion Control Total \$ 11,427.73

Construction Cost Total \$ 275,593.74

Traffic Control (8% of Construction Total \$) \$ 22,047.50

Construction Cost Grand Total \$ 297,641.24

Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00		\$ -
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	0.00	\$ -
Phone				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50		\$ -
Buried	\$ 16.50	\$ 55.00	75.00	\$ 5,362.50
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 10,725.00</b>

Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost
Permanent Easement	\$ 4.00	3,750.00	\$ 15,000.00
<b>ROW Total</b>			<b>\$ 15,000.00</b>

General Information		Map	
<b>Project ID</b>			
<b>Street Name</b>	261 Trickum Creek Rd		
<b>Site Visit Date</b>	6/11/13		
<b>Road Classification</b>	County Local		
Project Notes			
Rural Typical Section			
Field Notes			
Design (Existing Site Features)			
<b>Existing Road Laneage</b>	2-10'		
<b>Existing Shld Width (paved and grass) (feet)</b>			
<b>Existing Side Slopes</b>			
<b>Existing Guardrail</b>			
<b>Depth fm Pavement to Top of Culvert (ft):</b>			
<b>Pipe Type and Size</b>	3- 7' CMP, 70'		
<b>Pipe Condition (1-5) (1 is new)</b>	2		
Condition Notes: No Headwall			
<b>Pavement Type/Condition</b>	Gravel/Fair		
Environmental Features			
<b>Wetlands</b>	Yes		
<b>Ditches</b>	None		
Utilities (Visual Inspection)			
<b>Electric</b>	Aerial		
<b>Cable</b>	Aerial		
<b>Phone</b>	Aerial		
<b>Gas</b>			
<b>Water</b>			
<b>Sewer</b>			
<b>Other</b>			
Proposed Design			
<b>Roadway Section</b>	Road dimensions from Google Earth		
<b>Culvert Size &amp; Material</b>	Triple 8' x 5' box culvert, 70'		
<b>Utility Relocations</b>	Utility poles, aerial electric, cable, phone		
<b>Guardrail Replacement</b>			
<b>Miscellaneous Features</b>	Zone AE with Floodway, Floodplain Analysis Required		
Planning Cost Estimate			
Type	Notes	Total	
<b>Design</b>	Includes 10% Construction Cost and surveying needs	\$38,381	
<b>Right of Way Cost</b>	Assuming project extends 3,000 sf beyond ROW	\$15,675	
<b>Utility Relocation Cost</b>	Utility poles, aerial utilities	\$15,675	
<b>Construction Cost</b>	Assuming 1/5 acre clearing and grubbing	\$258,810	
<b>Environmental Permits</b>	Permits, Floodplain Analysis	\$18,000	
Total Planning Estimate		<b>\$346,541</b>	



**Photo 1:**



**Photo 2:**

Trickum Creek Road

**Photo Date:**

5/21/2013

**Taken By:**

David King

**Page:**

**1**

Roadway Construction, Utility Relocation and ROW Quantity Calculations

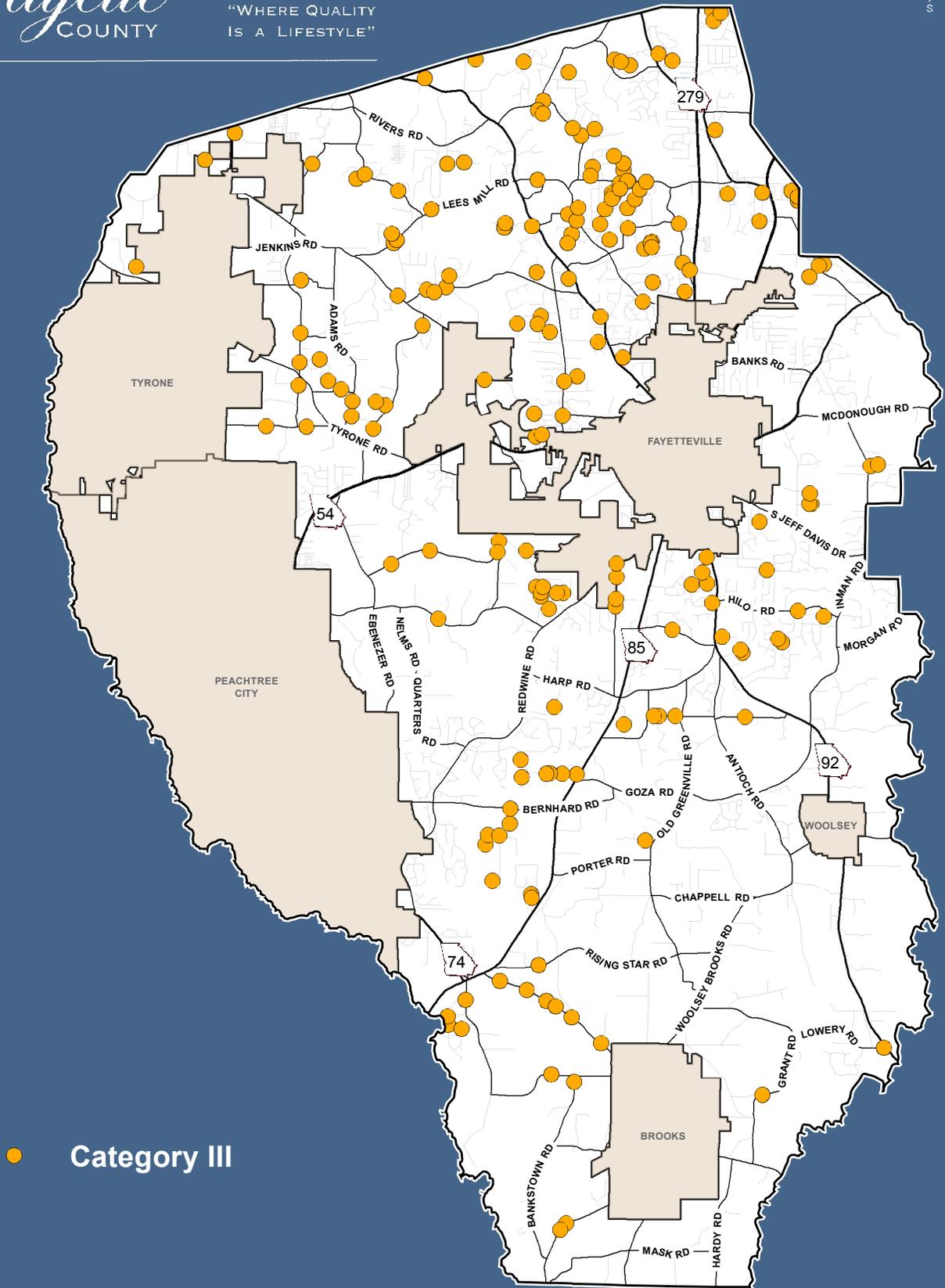
Roadway Construction	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Pavement (SF)	\$ 0.73	\$ 4.87	1,144.00	\$ 6,412.50
Temporary Gravel Road (SY)		\$ 15.42	222.22	\$ 3,426.67
Curb and Gutter (LF)	\$ 28.56	\$ 30.60	20.00	\$ 1,183.20
Drain Inlet (EA)		\$ 3,000.00	0.00	\$ -
4" Sidewalk (SY)	\$ 13.56	\$ 36.90	0.00	\$ -
Guardrail (LF)	\$ 4.88	\$ 49.09	0.00	\$ -
End Anchorage (EA)		\$ 1,380.00	0.00	\$ -
<b>Subtotal</b>				<b>\$ 11,022.37</b>
<b>Grading Complete (5% of Rwy Items &amp; Drng Total \$)</b>				<b>\$ 10,385.83</b>
<b>Roadway Total</b>				<b>\$ 21,408.20</b>
Drainage	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Trench Excavation (CY)		\$ 10.38	881.48	\$ 9,149.78
84" CMP (LF)	\$ 63.00		210.00	\$ 39,690.00
84" RCP		\$ 455.00	0.00	\$ -
Class A Conc (CY)		\$ 892.19	132.51	\$ 118,223.83
Steel (lb)		\$ 1.42	13,383.00	\$ 18,950.33
Pipe Bedding (CY)		\$ 48.60	69.30	\$ 3,367.98
Trench Backfill (CY)		\$ 2.99	905.44	\$ 2,705.46
Trench Compaction (CY)		\$ 6.36	724.35	\$ 4,606.88
<b>Drainage Total</b>				<b>\$ 196,694.26</b>
Signing and Marking		Installation Unit Cost	Amount	Total Cost
Permanent Striping (LF)		\$ 0.71	0.00	\$ -
<b>Signing and Marking Total</b>				<b>\$ -</b>
Staging		Installation Unit Cost	Amount	Total Cost
Clearing and Grubbing (Acre)		\$ 10,260.00	0.20	\$ 2,052.00
Temporary Pavement				\$ -
Temporary Drainage (Stream Diversion)		\$ 4,428.00	2.00	\$ 8,856.00
<b>Staging Total</b>				<b>\$ 10,908.00</b>
Erosion Control		Installation Unit Cost	Amount	Total Cost
Fine Grading and Seeding (SY)		\$ 4.39	138.67	\$ 609.02
Temporary Grassing (AC)		\$ 855.60	0.00	\$ -
Type C Silt Fence (LF)		\$ 4.24	420.00	\$ 1,779.12
Check Dam Type C Silt Fence (LF)		\$ 6.79	420.00	\$ 2,852.64
Erosion Control Mats (SY)		\$ 1.87	140.00	\$ 262.08
Landscape Mulch (SY)		\$ 3.58	140.00	\$ 500.64
Perm Grassing (AC)		\$ 1,402.20	0.00	\$ -
Rip Rap Type 3 12" (SY)		\$ 60.98	69.33	\$ 4,228.22
Plastic Filter Fabric (SY)		\$ 5.72	69.33	\$ 396.86
4" Ditch Paving (SY)		\$ 54.65	0.00	\$ -
<b>Erosion Control Total</b>				<b>\$ 10,628.59</b>
<b>Construction Cost Total</b>				<b>\$ 239,639.05</b>
<b>Traffic Control (8% of Construction Total \$)</b>				<b>\$ 19,171.12</b>
<b>Construction Cost Grand Total</b>				<b>\$ 258,810.17</b>
Utility Relocation	Removal Unit Cost	Installation Unit Cost	Amount	Total Cost
Electric				
Aerial	\$ 11.00	\$ 55.00	100.00	\$ 6,600.00
Buried	\$ 16.50	\$ 82.50	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00	2.00	\$ 1,375.00
Phone				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Cable				
Aerial	\$ 11.00	\$ 27.50	100.00	\$ 3,850.00
Buried	\$ 16.50	\$ 55.00	0.00	\$ -
Wooden Pole	\$ 82.50	\$ 605.00		\$ -
Gas				
4" main	\$ 16.50	\$ 66.00		\$ -
Water				
8" main	\$ 16.50	\$ 93.50	0.00	\$ -
Relocate Fire Hydrant (EA)		\$ 2,609.22		\$ -
Sewer			0.00	\$ -
12" main	\$ 16.50	\$ 82.50	0.00	\$ -
<b>Utility Relocation Total</b>				<b>\$ 15,675.00</b>
Right of Way (Sq Ft)	Cost/ Sq Ft	Sq Ft	Total Cost	
Permanent Easement	\$ 4.00	3,000.00	\$ 12,000.00	
<b>ROW Total</b>			<b>\$ 12,000.00</b>	





Fayette  
COUNTY

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## CATEGORY III

PROJECT LOCATION	ESTIMATED COST
214 ADAMS RD	\$8,510
125 BANKSTOWN RD	\$7,575
375 BENJAMIN CIR	\$18,906
120 BENZ CT	\$22,951
135 BENZ CT	\$19,399
460 BERNHARD RD	\$8,808
105 BERRY RIDGE RD	\$8,712
120 BON AMI CT	\$10,326
105 BRANDON MILL CIR	\$18,555
100 BRASWELL LA	\$5,394
130 BRIARLAKE CT	\$17,671
145 BRIERWOOD DR	\$8,111
205 BROOKSHIRE DR	\$9,147
185 BROOKSHIRE DR	\$9,147
147 BUSBIN RD	\$9,147
197 BUSBIN RD	\$7,575
211 BUSBIN RD	\$7,575
317 BUSBIN RD	\$7,853
BUSBIN ROAD 150 FEET WEST OF SR 85	\$7,575
109 BUTLER RD	\$8,072
170 CARROLLS WAY	\$6,278
235 CARROLLS WAY	\$8,072
275 CARROLLS WAY	\$8,072
110 CATHERINE LN	\$21,590
105 CHEROKEE PL	\$8,072
260 COUNTRY LANE RD	\$9,147
100 CREEKWOOD CT	\$17,448
100 DARREN DR	\$6,376
107 DAVIS RD	\$7,518
265 DAVIS RD (2,000 ft. west of)	\$7,296
504 DAVIS RD	\$10,508
225 DERBY DR	\$9,755
154 DIXON CIR	\$7,853
186 DOGWOOD TR	\$7,739
388 EASTIN RD	\$7,739
506 EBENEZER CHURCH RD	\$8,066

## CATEGORY III

PROJECT LOCATION	ESTIMATED COST
228 ELLISON RD	\$7,853
332 ELLISON RD	\$8,291
378 ELLISON RD	\$7,428
125 EMERALD LN	\$19,553
135 ESSEX CIR	\$7,603
155 FAIRFIELD CIR	\$17,740
115 FIRETHORN LN	\$9,516
100 FLAT CREEK CT	\$7,853
155 FLAT CREEK CT	\$9,000
301 FLAT CREEK TR	\$9,000
626 FLAT CREEK TR	\$7,739
305 FRANKLIN FARMS CIR	\$18,906
105 GENTLE DOE DR	\$17,241
216 GINGER CAKE RD	\$7,575
347 GINGER CAKE RD	\$7,739
161 GINGER CAKE TR	\$19,650
271 GINGER CAKE TR	\$19,650
285 GREEN VALLEY	\$7,853
105 GREENFIELD CIR	\$8,746
350 HARRIS RD	\$7,594
115 HERITAGE WAY	\$20,626
159 HIGHLAND HILLS RD	\$8,753
210 HIGHLAND HILLS RD	\$8,483
1373 HIGHWAY 85 CONN	\$7,575
1415 HIGHWAY 85 CONN	\$7,739
166 HIGHWAY 85 CONN	\$8,589
246 HIGHWAY 85 CONN	\$8,589
336 HIGHWAY 85 CONN	\$7,575
348 HIGHWAY 85 CONN	\$9,147
423 HIGHWAY 85 CONN	\$8,631
588 HIGHWAY 85 CONN	\$7,853
382 HILO RD	\$8,291
1116 HOOD RD	\$7,633
879 HOOD RD	\$8,092
115 HORSE SHOE CIR	\$9,059
130 IDLEWOOD LN	\$9,567

## CATEGORY III

PROJECT LOCATION	ESTIMATED COST
120 KARI GLEN DR	\$8,699
105 KEN CIR	\$7,363
115 KEYLAND DR	\$19,051
105 KINGSWOOD WAY	\$15,808
215 KIRKLY RD	\$7,575
114 KITE LAKE RD	\$8,332
257 KITE LAKE RD	\$8,808
285 KITE LAKE RD	\$8,730
130 LADY HELEN CT	\$11,394
150 LAKEVIEW LN	\$9,631
125 LAMBERTH LAKE DR	\$18,989
210 LANG DR	\$9,942
133 LAURA LN	\$6,490
584 LEES MILL RD	\$7,739
431 LESTER RD	\$7,575
150 LITTLE CREEK DR	\$19,413
150 LOCKWOOD RD	\$7,853
160 LOFTY EAGLE LN	\$17,725
185 LONGVIEW RD	\$8,589
114 LOWERY RD	\$11,083
100 MACKENZIE LN on Eastin	\$19,430
243 MCBRIDE RD	\$11,382
555 MCBRIDE RD	\$8,195
518 MCBRIDE ROAD at PROVIDENCE DR	\$7,147
110 MELODY LN	\$10,646
285 MERRYDALE DR	\$9,631
133 MITCHELL RD	\$7,575
395 MORGAN MILL RD	\$8,354
140 MUSE RD	\$7,575
110 MUSE RD and LEES LAKE RD	\$6,376
762 NEW HOPE RD	\$8,279
988 NEW HOPE RD	\$5,917
175 NORTH BEND CT	\$22,818
245 NORTH DR	\$21,341
100 NORTHWIND TRL	\$18,992
140 OLD SENOIA RD	\$7,739

## CATEGORY III

PROJECT LOCATION	ESTIMATED COST
105 OLDE OAK DR	\$8,419
175 OLDE OAK DR	\$8,176
245 OMIN RD	\$8,092
125 PINWOOD DR	\$8,072
285 PLANTATION RD	\$7,575
100 POSTWOOD DR	\$10,130
100 REDBUD CT	\$6,928
980 REDWINE RD	\$7,734
210 RENNES CT	\$19,136
135 RILEY CT	\$7,603
130 RUSTIC MILL LN	\$11,254
150 RUSTIC MILL LN	\$13,971
145 S WOOD CT	\$21,024
302 SAMS DR and Lees Mill Rd	\$8,746
150 SENECA PL	\$8,072
180 SHAMROCK DR	\$9,826
138 SHELBY LN	\$8,255
145 SHELBY LN	\$7,739
310 SHERWOOD RD	\$7,908
325 SHERWOOD RD	\$7,696
380 SHERWOOD RD	\$7,853
350 SHERWOOD RD at BROOKSHIRE DR	\$18,906
128 STANLEY RD	\$12,538
190 STARRS MILL DR	\$8,072
385 STONERIDGE WAY	\$9,163
105 SUMMerville DR	\$8,767
233 SWANSON RD	\$6,048
171 TALL PINE DR	\$19,549
125 TANDY TRCE	\$17,734
112 THOMPSON RD	\$7,633
130 THORNTON CT	\$20,209
240 THORNTON DR	\$18,002
165 THORNTON LN	\$7,575
166 TRAMMELL RD (East of)	\$7,633
128 TRICKUM CREEK RD	\$7,923
WAGON WHEEL TRL 200 WEST OF SALMA DR	\$13,687

# CATEGORY III

PROJECT LOCATION	ESTIMATED COST
330 WEEPING WILLOW WAY	\$20,714
140 WESLEY PL	\$8,092
155 WESTBRIDGE CIR	\$7,575
320 WHITE OAK WAY	\$6,490
240 WHITNEY WAY	\$7,642
136 WILKINS RD	\$7,575
160 WILLS WAY	\$19,553
120 WISTERIA CT	\$18,834
140 YATES DR	\$19,632
<b>2016 CATEGORY III TOTAL</b>	<b>\$1,651,211</b>



# CATEGORY IV

Project Name	DESCRIPTION	Cost
Stormwater Infrastructure Improvements	Functionality improvements identified through inventory and inspections. Work includes paving inverts, replacing headwalls, catch basin lids and drainage pipes that are currently inaccessible.	\$500,000
Professional Services/ Easement Acquisition	During the design phase many details must be addressed including the easement locations. Work includes surveying and preparation of legal documents.	\$200,000
FY 2014 Stormwater Utility Reimbursement		\$500,000
Utility Coordination/ Relocation	Project includes costs associated with easement requirements and special construction provisions for project and utility owners in accordance with federal, state, and local utility accommodation policies.	\$293,256
<b>2016 CATEGORY IV TOTAL</b>		<b>\$1,493,256</b>