



TECHNICAL MEMO

To: Mr. Henry Knackstedt
Kenai Peninsula Borough
47140 East Poppy Lane
Soldotna, Alaska 99669

July 11, 2011

From: David E Johnson P.E.
Johnson Engineering LLC
P.O. Box 4087
Soldotna, Alaska 99669

Phone: 907 398 2670

Subject: Kenai Peninsula Borough Road Service Area
Spruce Circle, Ridge Road and Ring of Fire Road Improvement Project
Project Number S4RID
Evaluation of Proposed Road Realignment(s) on Ridge Street

Purpose.

The RSA requested that Johnson Engineering LLC evaluate the relative cost associated with two potential road realignments on Ridge Street that have been proposed by local property owners; Mr. James Anderson and Mr. Dennis (Abe) Abrahamson. The attached site plan shows the approximate location (no actual survey work has been performed at this point) of the realignments. While the two proposed realignments are nearly continuous within that section of Ridge Street, they are being proposed by two separate individuals who own properties (or have long-term leases on properties) adjacent to one-another. Because the proposed realignments are not dependent, one or both could be incorporated into the project. In addition, because the success of incorporating the realignments into this project are dependent on whether or not the property owners can successfully construct or prepare the roadbed within the timeframe required, the two proposed realignments will be treated separately and costs provided separately in this report.

Accordingly, the purpose of this report is to compare the cost associated with upgrading Ridge Street, as originally designed to the cost associated with moving portions of the road to a new alignment(s) as proposed by Mr. Anderson and Mr. Abrahamson.

Background.

The KPB has awarded a contract to Arno Construction to upgrade Spruce Circle Road, Ridge Street and Ring of Fire (as a single project) using the current road alignment. The project consists of clearing and grubbing, installing new culverts, digging out unstable areas within the existing road, miscellaneous ditch re-grading, placing geotextile fabric and overlaying the existing road with one foot of additional gravel. The current design for the road improvement project centered the gravel overlay on the existing road section where ever possible to reduce cost.

As of the date of this report, Arno Construction has cleared and grubbed areas not affected by the proposed realignments, installed culverts, repaired soft sub base areas and has begun installing geotextile and gravel overlay on Spruce Circle Road. He has voluntarily held off working in the areas that may be affected by the proposed realignments until a decision is made whether to proceed with the property owners proposals or not. As it currently stands, the proposed realignments extend across private or lease-held property and therefore, all work performed to date on is the responsibility of the individual private property owners.



Mr. Anderson and Mr. Abrahamson have stated that they have control of the property either by ownership and/or by long term lease, so access to other property under other ownership should not be affected. This will need to be confirmed however before proceeding.

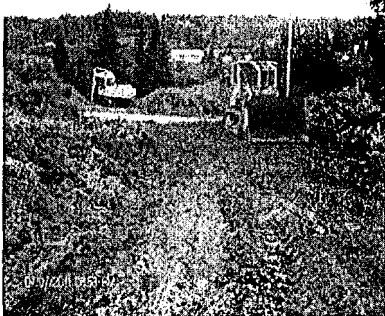
On May 9, 2011, Mr. Henry Knackstedt issued a memo that identified KPB concerns, most notably that KPB is “unable to expend funds for road construction on private property”, which places additional burden on the private land owners. His memo also identified a way forward for the proposed realignments to move forward. One additional important nuance is that the realigned areas would be considered *new road* and therefore would need to meet KPB new road construction standards. Most importantly these standards include longitudinal grade and road section width and depth. The road improvement project was not subject to this requirement because we were improving an existing road confined by existing grade and width limitations.

The cost estimating used for this report is based on unit prices contained in the Arno Construction contract. Mr. Arno as expressed a willingness to cooperate in modifying the nature and extent of his project provided that the overall project amount remains similar and that difficulty of construction does not increase. It is also based on both private property (Mr. Anderson and Mr. Abrahamson) providing a suitable roadbed meeting KPB standards for width and longitudinal grade (max 10%). Also, in order meet KPB minimum road construction standards for thickness of structural section (18”) and to use the standard pay item in Arno’s contract for constructing a 20’ wide road surface, it has been assumed that both Mr. Anderson and Mr. Abrahamson will provide a 6” gravel cap over a graded and compacted sub-base. At that point, Arno construction will place a 12 inch thick typical section overlay in accordance with the project specifications and at the existing contract unit price for this bid item, over the prepared sub-base.

As of July 7, 2011, both private property owners have begun roughing in a proposed road alignment.

This report is based on proposed alignments that have been roughed in by the two owners and on approximate survey data obtained by measuring distances and elevations by rag tape and hand levels. A formal survey will need to be done if this proposed change moves forward.

Anderson Realignment.



Mr. Anderson has proposed to realign that portion of Ridge Street beginning at Spruce Circle Road and ending at approximate station 62+00 as shown on the attached site plan. The corresponding existing road length is approximately 1,200’ (station 50+00 to 62+00) while the realignment (departing from the existing ROW and ending at approximately the same locations) is slightly less than 1,100’. The existing road grade varies between 13% and 14% between station 50+00 and 57+00 after which it flattens to a more manageable slope to 62+00, where the proposed realignment returns to the existing ROW. The photo at left shows a portion of the roughed in alignment where it crosses the current Ridge Street ROW at approximate station 53+00. According to Mr. Anderson, the proposed grade of the realignment will be 10% or less, which meets current KPB Standards for new roads. Anderson’s proposed route is slightly shorter than the existing route and traverses the hillside at a more constant grade.



The photo at left shows the approximate location where the proposed realignment rejoins the existing alignment at approximate station 62+00.

At this point, there are several loose ends that could become problematic. KPB is currently under contract with Arno Construction to build the project as originally designed and put out to bid. Significant departures from the as-bid project scope usually require a change order and in this case, will involve extending the contract



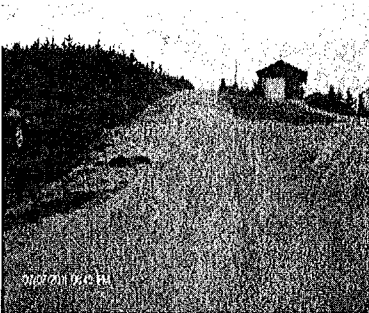
into the next construction season. It should be noted that significant changes made to a project after a contract is signed can provide an opportunity for the contractor to seek additional reimbursement for unplanned changes. In addition, Mr. Anderson will need to complete his work (i.e. preparing the road sub-base to an acceptable condition) within the timeframe established). Arno's storm water pollution prevention plan (SWPPP) will need to be amended to incorporate the realignment and to deal with erosion potential on long steep cut and fill slopes. Additional seeding and erosion measures may be required. Estimated cost for this work is included in the estimate.

The attached spreadsheet entitled "Anderson Realignment" identifies the estimated cost differential between the as designed project and the realigned project.

Advantages/benefits to Anderson Realignment:

1. Significant reduction in road grade making maintenance easier and overall travel safer, particularly during winter driving conditions and snow removal;
2. Reduces overall distance by approximately 100';
3. Road width will increase by approximately 2';
4. Will decrease overall project cost by \$17,308.

Abrahamson Realignment.



Mr. Abrahamson has proposed to realign a portion of Ridge Street beginning at approximate road station 63+60 and ending at about 69+25, as shown on the attached site plan. The corresponding existing road length is approximately 565' while the realignment (beginning and ending at approximately the same point) is approximately 650'. The existing road grade varies between 12% in a short localized area, to an average of around 8.5% over the entire 565' length. The photo on left shows the steep section of existing road, the beginning of the proposed realignment at station 63+60 and the proximity of the buildings adjacent to the existing road.



According to Mr. Abrahamson, the proposed grade of the realignment will be 10% or less, which meets current KPB Standards for new roads. He has also proposed to cap the graded subgrade with 6" of gravel.

The photo to the left is taken at approximate realignment station 4+00 and is looking down station (southwest). The approximate grade is between 11 and 12%

In addition to the potential "loose ends" identified under the Anderson narrative, Mr. Abrahamson may have created a difficult to resolve erosion problem by pushing excess soil over a steep embankment to the left near station 3 (see site plan). In addition, the deep cut between station 3 and 5 could provide some snow

accumulation/removal challenges.

The attached spreadsheet entitled "Abrahamson Realignment" identifies the estimated cost differential between the as designed project and the realigned project.

Advantages/benefits:

1. A partial reduction in road grade (approximately 250' of the 565' of existing road exceeds 10%) which would make maintenance easier and overall travel safer, particularly during winter driving conditions;



2. Road is moved away from existing structures and homes reducing dust, noise and entrance problems;
3. Road width will increase by approximately 2';
4. Will decrease overall project cost by \$2,176.

Other Notable Issues/Concerns

1. Both Mr. Anderson and Mr. Abrahamson have likely disturbed more than 1 acre of ground, which implies that a project Storm Water Pollution Prevention Plan (SWPPP) is required under state and federal rules for the work that they have undertaken. Ultimately, if Arno's contract is extended into these realignment areas, Arno's SWPPP would have to be amended to include this area. However, as it now stands, it is likely that both Mr. Anderson and Mr. Abrahamson are in violation of this requirement.
2. This portion of Ridge Street is part of the Anchor River and Fritz Creek Critical Habitat Area. A permit to construct the project as originally designed was obtained from the Alaska Department of Fish and Game. That permit will have to be modified to incorporate the proposed realignments.
3. Homer Electric and ACS both have utilities in the existing right-of-way.
4. Ultimately, survey work will be required to accurately describe the new road easement area. Cost for that work is not included in this estimate.
5. If one or both realignments move forward, additional design and construction survey costs and additional engineering design and construction inspection costs are anticipated. These costs have not been incorporated into the estimated cost presented in this report. Once the proposed change is better defined, we would be pleased to provide that estimate.

Conclusions.

Based on the information currently available, both realignments appear to be feasible and will enhance the overall project by decreasing longitudinal grade, increasing width of road surface, and the finished road will better meet the private property owner's goal of moving the existing road farther from their homes.

Assumptions

If the KPB decides to move forward with these realignments a few recommendations are in order:

Assume that the property owners will not complete their work before the end of this construction season. Accordingly, the Arno contract would need to extend into 2012 (as would the engineering contract). The current project is scheduled for completion in the fall of 2011. Aside from the obvious timing issues, delaying the completion until 2012 would benefit the project by allowing the realigned areas to be subjected to a complete freeze-thaw cycle that should reduce future settlements in the roadbed.

Some engineering design work needs to be done on the proposed realigned areas to assure that KPB grade and alignment requirements are met. The work could either be performed under Woodson Technical contract or Mr. Anderson and Mr. Abrahamson could provide this work independently. Because of liability issues, we would recommend that KPB modify Woodson's contract to incorporate this additional work.

Legal descriptions for the new right-of-way would need to be developed and possibly a right-of-way plat. The proposed realignments are apparently on state grazing land leased to the Mr. Anderson and Mr. Abrahamson, which could complicate obtaining ROW or easement approvals.



Once the scope and details of the change are established, negotiate a change order with Arno Construction that encapsulates the project and deals with any additional costs such as delay, mobilization and demobilization and any other details that may come out of the final design for the changes.

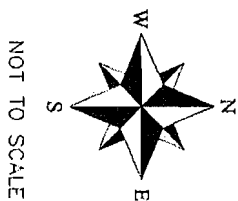
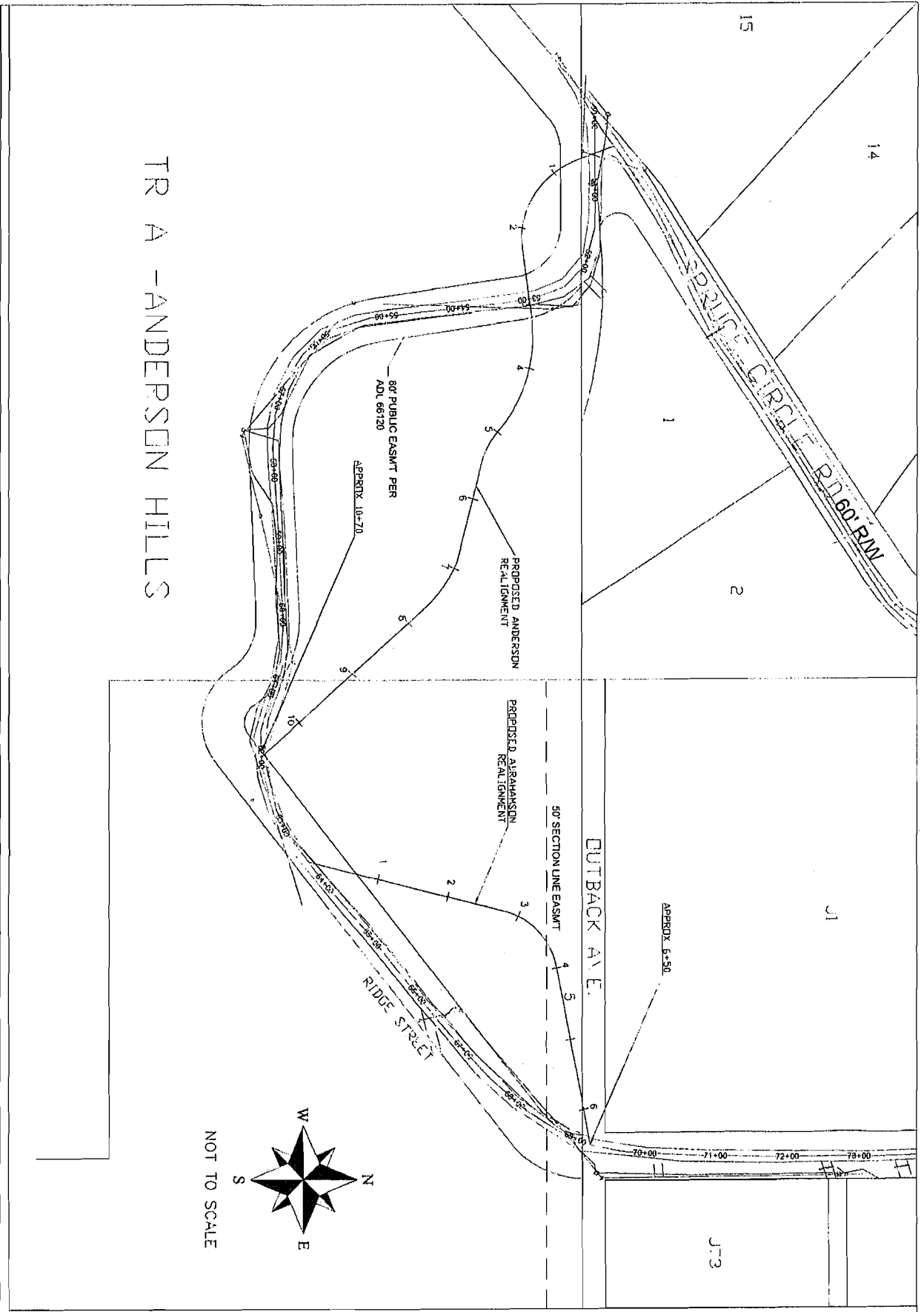
Once a decision is made by KPB whether or not to proceed with incorporating the proposed realignments into the project, field surveying and road design will be required.

Attachments:

Site Plan

Anderson Realignment Unit Price Spreadsheet

Abrahamson Realignment Unit Price Spreadsheet



NOT TO SCALE

<p>DATE: 1/11/11 DRAWN BY: JLD CHECKED BY: JLD APPROVED BY: JLD</p>	<p>SITE PLAN RIDGE ROAD REALIGNMENT STA 50+00 TO STA 62+00 STA 63+60 TO STA 69+25</p>	<p>KENAI PENINSULA BOROUGH SOUTH REGION ROAD IMPROVEMENTS SPRUCE CIRCLE ROAD - RIDGE STREET PROJECT NO. 558EL</p>	
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ABRAHAMSON REALIGNMENT										
				Current Contract		Plus or Minus Quantity		From Contract	Plus or Minus Amount	
Item	Work Description	Per	Qty	Unit Cost	Extended	Increase	Decrease	Unit Cost	Amt. Increase	Amt. Decrease
1	Existing Utilities in Construction Zone	LS	ALL REQ'D	\$7,800.00	\$7,800.00					
2	Clearing and Grubbing	LS	ALL REQ'D	\$8,840.00	\$8,840.00					
3	Removal of Culvert Pipe	LF	315	\$10.00	\$3,150.00					
4	Ditch Linear Grading	LF	1825	\$3.00	\$4,875.00					
5	Roadbed widening	STA	89	\$719.00	\$63,991.00		5	\$719.00		\$3,595.00
6	Embankment Construction 18' Wide	STA	64	\$2,260.00	\$144,640.00		5	\$2,260.00		\$11,300.00
7	Embankment Construction 20' Wide	STA	26	\$2,490.00	\$64,740.00	6.5		\$2,490.00	\$16,185.00	
8	Residential Approach	EA	21	\$690.00	\$14,490.00		3	\$690.00		\$2,070.00
9	Roadbed Repair	SY	1500	\$19.80	\$29,700.00					
10	Pull Out 10' x 50'	EA	4	\$820.00	\$3,280.00					
11	60' Dia turn-Around	LS	1	\$6,480.00	\$6,480.00					
12	Vertical Realignment/Construction 33+00 - 34+50 Spruce Cir	LS	1	\$940.00	\$940.00					
13	Vertical Realignment/Construction 64+00 - 69+00 Ridge Street	LS	1	\$5,544.00	\$5,544.00		All	\$5,544.00		\$6,544.00
14	Vertical Intersection Realignment Spruce Cir/Fox Road	LS	1	\$2,596.00	\$2,596.00					
15	Vertical Intersection Realignment Spruce Cir/Ridge Street	LS	1	\$3,059.00	\$3,059.00					
16	Ring of Fire Overlay	STA	5	\$1,020.00	\$5,100.00					
17	15" Corrugated Steel Pipe	LF	390	\$28.00	\$10,920.00		44	\$28.00		\$1,232.00
18	18" Corrugated Steel Pipe	LF	420	\$32.00	\$13,440.00					
19	36" Corrugated Steel Pipe	LF	34	\$88.00	\$2,992.00					
20	Ditch Lining	STA	12	\$1,220.00	\$14,640.00					
21	Ditch Check	EA	10	\$100.00	\$1,000.00					
22	Riprap Class I	CY	60	\$132.00	\$7,920.00					
23	Seeding	AC	1	\$5,600.00	\$5,600.00			\$5,600.00	\$1,120.00	
24	Geotextile Separation	SY	24100	\$1.28	\$30,848.00	360		\$1.28	\$460.00	
25	Mobilization And Demobilization	LS	1	\$1,200.00	\$1,200.00	1		\$1,200.00	\$1,200.00	
26	Erosion and Pollution Control Administration	LS	1	\$5,200.00	\$5,200.00	0.5		\$5,200.00	\$2,600.00	
27	Temporary Erosion and Pollution Control	CS	ALL REQ'D	CS	\$10,000.00					
28	Traffic Maintenance	LS	ALL REQ'D	(LUMP SUM)	\$2,500.00					
29	Miscellaneous Work	CS	ALL REQ'D	CS	\$20,000.00					
		Total Construction			\$495,486.00				\$21,565.00	\$23,741.00
		15% Construction								
		Estimated Construction								

1	A	B	C	D	E	F	G	H	I	J	K
2	ANDERSON REALIGNMENT										
3					Current Contract		Plus or Minus Quantity		From Contract	Plus or Minus Amount	
4					Unit Cost	Extended	Increase	Decrease	Unit Cost	Amt. Increase	Amt. Decrease
5											
6	Item	Work Description	Per	Qty	Unit Cost	Extended	Increase	Decrease	Unit Cost	Amt. Increase	Amt. Decrease
7	1	Existing Utilities in Construction Zone	LS	ALL REQ'D	\$7,800.00	\$7,800.00					
8	2	Clearing and Grubbing	LS	ALL REQ'D	\$8,840.00	\$8,840.00					
9	3	Removal of Culvert Pipe	LF	315	\$10.00	\$3,150.00					
10	4	Ditch Linear Grading	LF	1625	\$3.00	\$4,875.00					
11	5	Roadbed widening	STA	89	\$719.00	\$63,991.00		12	\$719.00		\$8,628.00
12	6	Embankment Construction 18' Wide	STA	64	\$2,260.00	\$144,640.00		12	\$2,260.00		\$27,120.00
13	7	Embankment Construction 20' Wide	STA	26	\$2,490.00	\$64,740.00	12		\$2,490.00	\$29,880.00	
14	8	Residential Approach	EA	21	\$690.00	\$14,490.00					
15	9	Roadbed Repair	SY	1500	\$19.80	\$29,700.00					
16	10	Pull Out 10' x 50'	EA	4	\$820.00	\$3,280.00					
17	11	60' Dia turn-Around	LS	1	\$6,480.00	\$6,480.00					
18	12	Vertical Realignment/Construction 33+00 - 34+50 Spruce Cir	LS	1	\$940.00	\$940.00					
19	13	Vertical Realignment/Construction 64+00 - 68+00 Ridge Street	LS	1	\$5,544.00	\$5,544.00					
20	14	Vertical Intersection Realignment Spruce Cir/Fox Road	LS	1	\$2,596.00	\$2,596.00					
21	15	Vertical Intersection Realignment Spruce Cir/Ridge Street	LS	1	\$3,059.00	\$3,059.00					
22	16	Ring of Fire Overlay	STA	5	\$1,020.00	\$5,100.00					
23	17	15" Corrugated Steel Pipe	LF	390	\$28.00	\$10,920.00					
24	18	18" Corrugated Steel Pipe	LF	420	\$32.00	\$13,440.00		40	\$32.00		\$1,280.00
25	19	36" Corrugated Steel Pipe	LF	34	\$88.00	\$2,992.00					
26	20	Ditch Lining	STA	12	\$1,220.00	\$14,640.00		12	\$1,220.00		\$14,640.00
27	21	Ditch Check	EA	10	\$100.00	\$1,000.00		10	\$100.00		\$1,000.00
28	22	Riprap Class I	CY	60	\$132.00	\$7,920.00					
29	23	Seeding	AC	1	\$5,600.00	\$5,600.00	0.3		\$5,600.00	\$1,680.00	
30	24	Geotextile Separation	SY	24100	\$1.28	\$30,848.00					
31	25	Mobilization And Demobilization	LS	1	\$1,200.00	\$1,200.00	1		\$1,200.00	\$1,200.00	
32	26	Erosion and Pollution Control Administration	LS	1	\$5,200.00	\$5,200.00	0.6		\$5,200.00	\$2,600.00	
33	27	Temporary Erosion and Pollution Control	CS	ALL REQ'D	CS	\$10,000.00					
34	28	Traffic Maintenance	LS	ALL REQ'D	(LUMP SUM)	\$2,500.00					
35	29	Miscellaneous Work	CS	ALL REQ'D	CS	\$20,000.00					
36				total Construction		\$495,485.00				\$35,360.00	\$52,666.00
37				15% Construction							
38				Estimated Construction							