

FEASIBILITY REPORT  
FOR  
PROPOSED ROAD IMPROVEMENT PROJECT  
OF  
WHITEWOOD AVENUE AND BIRCH ROAD  
CREDIT RIVER TOWNSHIP, MINNESOTA  
MAY 2008

Prepared by:



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I hereby certify that this Plan, Specification, or Report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under State of Minnesota Statutes 326.02 to 326.16.

A handwritten signature in black ink, appearing to read 'Shane Nelson', is written over a horizontal line.

Shane Nelson, PE

43381

License No.

May 30, 2008

Date

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## EXHIBITS

- EXHIBIT A. Whitewood Avenue and Birch Road Improvement Project -  
Benefiting Properties
- EXHIBIT B. Whitewood Avenue and Birch Road Local Residential Rural  
Street Section – 9 Ton Detail
- EXHIBIT C. Whitewood Avenue and Birch Road Local Residential Urban  
Street Section – 9 Ton Detail
- EXHIBIT D. Whitewood Avenue and Birch Road Reconstruction  
Improvement Project - Preliminary Cost Estimate

## I. INTRODUCTION

The purpose of this feasibility report is to present the Township of Credit River with a preliminary examination of road improvements for Whitewood Avenue and Birch Road. The report discusses the scope of reconstructing these roads from 170<sup>th</sup> Street East to each cul-de-sac. The report was initiated by the Credit River Town Board after a board meeting, and has been prepared in compliance with Minnesota State Statutes 429 for projects resulting in special assessments.

## II. PROJECT LOCATION

Whitewood Avenue and Birch Road are located in Section 6, Township 114 North, Range 21 West of Credit River Township, Scott County, Minnesota. There are currently 54 lots along Whitewood Avenue and Birch Road. The project area and roadway location is depicted on the Benefiting Properties Exhibit (Exhibit A) included in the Appendix of this report.

## III. ROADWAY IMPROVEMENT PROJECT

### A. Existing Conditions

Whitewood Avenue and Birch Road were originally constructed in 1976. There are many indications that the road is failing and is near or at the end of its design life. Whitewood Avenue and Birch Road were reviewed in 2006 as part of the Credit River Township Road Inventory and received a pavement ranking of 33 out of a possible ranking of 100, which are among the lowest ranking roads in the Township.

Maintenance has been performed on a yearly and as needed basis. The road has required patching and crack filling in recent years to repair transverse and alligator cracking. Some causes of road cracking may be excessive loads, failure of subgrade material, and poorly drained subgrades.

Whitewood Avenue is predominately rural in nature with a small section of urban section near the north end. The southern portion of the road (approximately 2100 feet) utilizes a rural section with ditch sections and driveway culverts. A combination of bituminous curb

and storm sewer is utilized on the northern portion of the road (approximately 450 feet, north of Birch Road). This northern section more closely resembles an urban section as there are not well defined ditches. The cul-de-sac on the north end of Birch Road is smaller than the Township standard, with an approximate 60 feet diameter bulb. The slope of the road north of Birch Road is a fairly steep downgrade, which must be considered in the final design.

Birch Road is approximately 900 feet in length and predominately utilizes a rural section. However, a defined ditch is not present near the southern cul-de-sac on the west side of the road. The existing cul-de-sac bulb on the south end of Birch Road is approximately 80 feet in diameter, which does not meet Township standards but may be sufficient.

Preliminary investigations by a geotechnical engineer indicate that the existing bituminous surface ranges from approximately 1 inch to 2 ½ inches in thickness. Beneath the existing bituminous surface is approximately 3 to 4 inches of Class 5 aggregate base. The preliminary investigations further indicated that a layer of soft soils are present in the subgrade in the southern portion of Whitewood Avenue. In general, the subgrade in the northern portion of Whitewood Avenue and along Birch Road is stable. Further investigations are necessary to adequately determine the subgrade condition and existing bituminous and Class 5 thicknesses.

The width of the existing streets vary slightly, but generally is 23 feet wide, consisting mainly of two 11 foot wide drive lanes with little or no shoulders. The total length of the project is approximately 0.65 miles (3,450 feet).

The Township was informed by the residents of the benefiting properties that water / drainage problems exist at or near their house foundations.

## B. Proposed Improvements

The project consists of reconstructing Whitewood Avenue and Birch Road in their entirety. The current road does not meet current Township standards. Improving the road to Township standards is

beyond the scope of this report. This project proposes to confine the roadway surface to the existing width, approximately 23 feet. It is anticipated that the cul-de-sac on the north end of Whitewood Avenue will be enlarged to a minimum diameter of 80 feet. Easements or right of way were not considered for purposes of this report. Further evaluation of existing easements/right of way will be necessary during final design.

The project involves removing the existing bituminous surface and aggregate base. The subgrade will then be excavated to the elevations as required and all soft and unsuitable material will be subcut from the roadbed and replaced with suitable material. After the subgrade has been toleranced and proof rolled, the Class 5 aggregate will be placed to the required thickness. Finally, the bituminous surface will be placed. Some ditching will be completed and driveway culverts will be replaced, if necessary. Shouldering material will be placed on each side of the road to reestablish the shoulder level with the new bituminous surface.

The addition of lateral drain tile along both sides of the road was also considered. The drain tile will serve as a public utility that will allow residents to connect their sump pumps to the 6 inch diameter drain tile to discharge water. The 6 inch diameter drain tile would be connected into storm sewer or have a free discharge to convey the water from the sump pumps to the existing drainage paths / lake via the 6 inch drain tile. It would be each homeowner's responsibility to connect to the 6 inch drain tile located in the public right of way.

#### C. Estimated Costs

The 2008 construction costs have been estimated for the proposed Whitewood Avenue and Birch Road improvement project. The estimated costs are estimates only and are not guaranteed prices. The costs shown are estimates based on actual bid prices from projects of similar scope and adjusted for inflation. Final contracts will be awarded on a unit price basis and the contractor will only be paid for work completed. No costs are included for easements.

The Town Board has ordered the feasibility reports to be prepared for two other improvement projects, Huntington Way and 210<sup>th</sup> Street

East. We would recommend that this project be combined with the Huntington Way and the 210<sup>th</sup> Street East projects for bidding purposes. Bidding the three projects in a combined bid may offer a costs savings to the Township and the benefiting properties to be assessed. The total estimated cost for this project is \$552,510.00.

An estimate of the cost of the improvements is shown in Exhibit D.

#### D. Financing and Assessments

The Township costs of the improvements for the reconstruction of Whitewood Avenue and Birch Road are proposed to be assessed to the benefiting properties. For this project, the recommended assessment method is to assess the benefiting properties on a per unit basis.

The Township may pass a general obligation/revenue bond that will be backed by assessment of the costs to the benefiting properties. The assessments may be paid in full up front or amortized over a period of time, typically 10 years, with an interest rate as determined by the Town Board. Generally, interest rates on assessments are on the order of 6 percent.

The Township may consider using existing Township funds to fund a portion of the project, with the remaining portion of the cost to be assessed to the benefiting properties. Partial Township funding would reduce the assessments to the benefiting properties proportionately.

One hundred percent assessment to the benefiting properties of this project on a per unit basis would yield an assessment of approximately \$10,230.00 per unit.

#### IV. PROJECT SCHEDULE

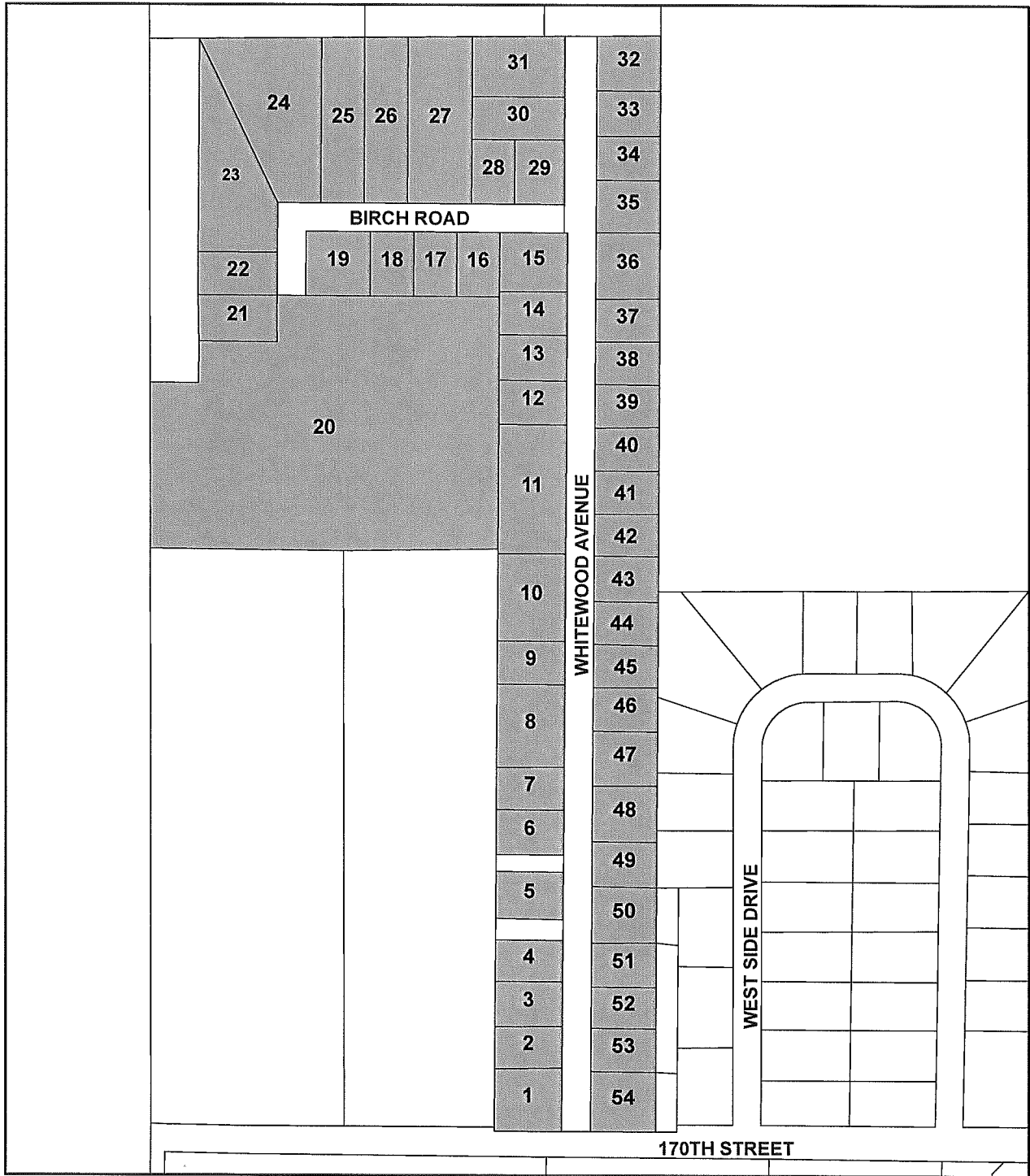
The schedule of the project will be determined by the date that the Town Board sets for construction. If the plans and specifications for the project are ordered by July 2008 the construction could begin in late August and substantial completion could be achieved by September 30, 2008. A tentative schedule is as follows:

May 5, 2008	Town Board Orders Neighborhood Meeting
May 6, 2008	Mail Neighborhood Information Meeting Letters
May 19, 2008	Town Board Conducts Neighborhood Meeting and Orders Preparation of Feasibility Report
June 2, 2008	Town Board Approval of Feasibility Report and Calls Public Hearings Publish on June 7 and June 14
June 3, 2008	Mail Public Hearing and Assessment Notices to Property Owners
July 7, 2008	Public Hearing Meeting/Open House/ Council Order Plans and Specifications
July 21, 2008	Council Approve Plans and Specifications and Authorize Advertisement for Bids
July 26, 2008	Ad to Construction Bulletin and Newspaper
August 18, 2008	Bid Opening/ Council Approve Bids and Awards Contract
August 25, 2008	Construction Starts
September 30, 2008	Substantial Completion

## V. CONCLUSIONS AND RECOMMENDATIONS

We find that this project is necessary, cost effective and feasible from a technical and engineering standpoint, and benefits the properties proposed to be assessed. We would recommend that the Town Board accept this report.

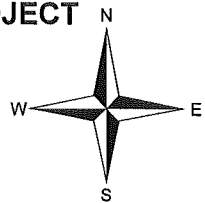
This project is recommended to be bid in conjunction with the proposed Huntington Way and 210<sup>th</sup> Street East projects to offer a cost savings to the Township and the assessed properties.



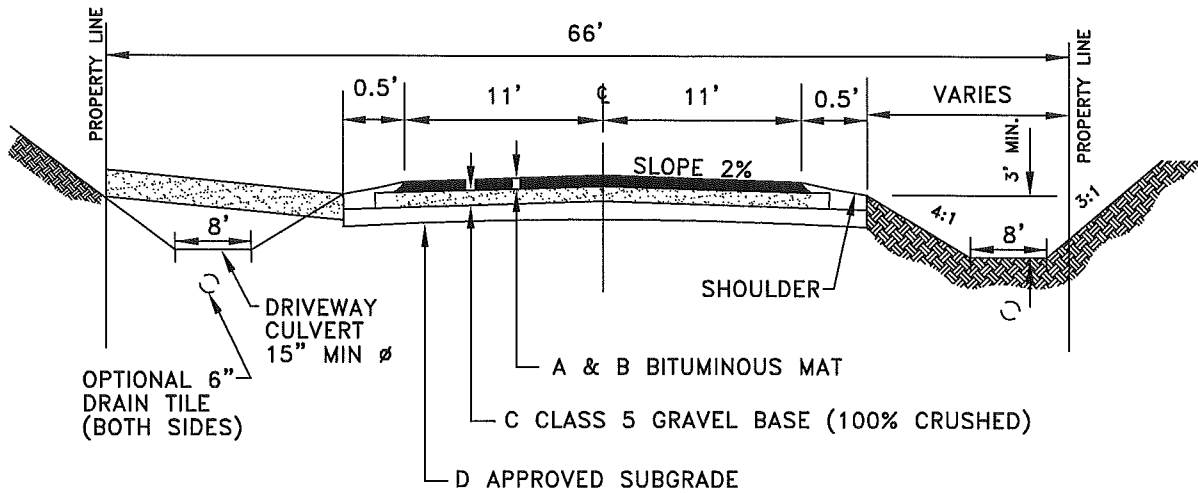
**CREDIT RIVER TOWNSHIP  
 WHITEWOOD AVENUE AND BIRCH ROAD IMPROVEMENT PROJECT  
 BENEFITING PROPERTIES**

**Legend**

- Benefiting Property
- 10 Benefiting Property Number



SOURCE: SCOTT COUNTY SURVEY DEPT.



LEGEND					
AASHTO	R VALUE SIGMA N18	BITUMINOUS SURFACE		AGGREGATE BASE	
SUBGRADE SOIL CLASS		WEAR 2350 LVWE45030B	NON-WEAR 2350 LVNW35030B	CLASS 5 OR 6 3138 C*	CLASS 3 OR 4 3138 D*
A-3	(R-70 ≤ 90,000)	** 1 1/2"	** 2 1/2"	** 9"	-
A-4	(R-20 ≤ 90,000)	1 1/2"	2 1/2"	9"	-
A-6	(R-15 ≤ 90,000)	1 1/2"	2 1/2"	9"	6"
A-7	(R-10 ≤ 90,000)	1 1/2"	2 1/2"	9"	7"
	(R-5 ≤ 90,000)	1 1/2"	2 1/2"	9"	18"

\* SUBJECT TO REVIEW BY QUALIFIED SOILS ENGINEER

\*\* MINIMUM ALLOWABLE DESIGN THICKNESS

NOTES: R VALUE IS A MEASURE OF EMBANKMENT SOIL RESISTANCE STRENGTH AS DETERMINED BY THE HVEEM STABILOMETER METHOD

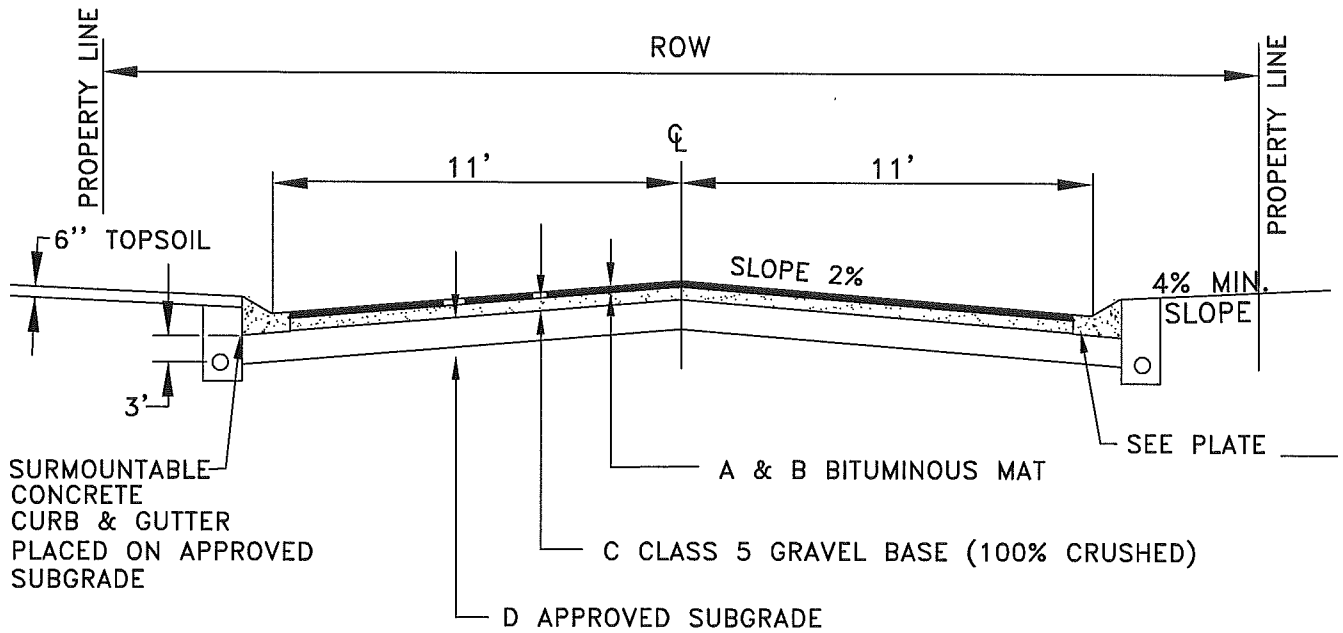
SIGMA N18 VALUE IS THE CUMULATIVE DAMAGE EFFECT OF VEHICLES DURING THE DESIGN LIFE OF A FLEXIBLE PAVEMENT.

CREDIT RIVER TOWNSHIP  
 WHITEWOOD AVENUE AND BIRCH ROAD  
 LOCAL RESIDENTIAL RURAL STREET SECTION - 9 TON



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EXHIBIT B



LEGEND					
AASHTO	R VALUE SIGMA N18	BITUMINOUS SURFACE		AGGREGATE BASE	
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SIGMA N18 VALUE IS THE CUMULATIVE DAMAGE EFFECT OF VEHICLES DURING THE DESIGN LIFE OF A FLEXIBLE PAVEMENT.

CREDIT RIVER TOWNSHIP  
 WHITEWOOD AVENUE AND BIRCH ROAD  
 LOCAL RESIDENTIAL URBAN STREET SECTION - 9 TON



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EXHIBIT C

EXHIBIT D  
 WHITEWOOD AVENUE AND BIRCH ROAD  
 RECONSTRUCTION PROJECT  
 PRELIMINARY ESTIMATE  
 CREDIT RIVER TOWNSHIP

ITEM NO.	SPEC.	ITEM DESCRIPTION	ESTIMATED QUANTITY	UNIT PRICE	EXTENSION
1	2021	MOBILIZATION (MAX. 3% OF TOTAL BID)	1 L.S.	\$13,000.00	\$13,000.00
2	2104	REMOVE CONCRETE PAVEMENT (DRIVEWAYS)	3900 S.F.	\$0.50	\$1,950.00
3	2104	REMOVE BITUMINOUS PAVEMENT-STREET	9500 S.Y.	\$1.50	\$14,250.00
4	2104	REMOVE BITUMINOUS PAVEMENT-DRIVEWAY	1300 S.Y.	\$2.00	\$2,600.00
5	2104	SAWING CONCRETE PAVEMENT	200 L.F.	\$4.00	\$800.00
6	2104	SAWING BITUMINOUS PAVEMENT	610 L.F.	\$3.00	\$1,830.00
7	2105	COMMON EXCAVATION (CV)	2100 C.Y.	\$7.00	\$14,700.00
8	2105	SUBGRADE EXCAVATION (CV)	4000 C.Y.	\$8.00	\$32,000.00
9	2105	GEOTEXTILE FABRIC	9500 S.Y.	\$3.00	\$28,500.00
10	2112	SUBGRADE PREPARATION	37 RDSTA	\$240.00	\$8,880.00
11	2211	AGGREGATE BASE CLASS 5 (6 inches thick)	4000 TON	\$15.00	\$60,000.00
12	2350	TYPE LV 4 WEARING COURSE MIXTURE (B)	850 TON	\$55.00	\$46,750.00
13	2350	TYPE LV 3 NON WEARING COURSE MIXTURE (B)	1300 TON	\$50.00	\$65,000.00
14	2357	BITUMINOUS MATERIAL FOR TACK COAT (0.05 gal/SY)	550 GAL	\$3.00	\$1,650.00
15	2350	BITUMINOUS DRIVEWAY PAVEMENT 2.5" THICK	1300 S.Y.	\$13.00	\$16,900.00
16	2501	RCP STORM SEWER PIPE	1500 LF	\$40.00	\$60,000.00
17	2506	DRAINAGE STRUCTURES	8 EACH	\$2,000.00	\$16,000.00
18	2531	6" CONCRETE DRIVEWAY PAVEMENT	450 S.Y.	\$32.00	\$14,400.00
19	2531	CONCRETE CURB AND GUTTER	1000 L.F.	\$10.00	\$10,000.00
20	2563	TRAFFIC CONTROL	1 L.S.	\$2,000.00	\$2,000.00
21	2575	SEEDING	3.50 ACRE	\$2,000.00	\$7,000.00
22	2575	EROSION CONTROL BLANKET CATEGORY 4	100 S.Y.	\$3.00	\$300.00
23	2564	SALVAGE AND REINSTALL STREET & STOP SIGNS	4 EACH	\$50.00	\$200.00
24	3276	6" DRAINTILE W/ ROCK TRENCH	7000 LF	\$9.00	\$63,000.00

ESTIMATED CONSTRUCTION COST	\$418,710.00
CONSTRUCTION CONTINGENCY (10%)	\$41,800
ENGINEERING AND LEGAL (20%)	\$92,000.00
<b>ESTIMATED PROJECT COST</b>	<b>\$552,510.00</b>