

620782P August 12, 2010

Mr. Steve Gladczuk Senior Transportation Planner Central Vermont Regional Planning Commission 29 Main St. Suite 4 Montpelier, VT 05602

Re:

Town of Moretown – Sidewalk Study Update

Contract #0981674

Off Street Sidewalks at Moretown Elementary School

### Dear Steve:

As part of the Moretown Sidewalk Conceptual Alignment Update, we were requested to develop a cost estimate for sidewalks to connect Vermont Route 100B with entrances to the Moretown Elementary School. We have taken into consideration the discussion with the schools' principal, discussion at the Alternatives Presentation Meeting, conducted a field visit, prepared a conceptual plan and developed cost estimates. This letter includes the plan, estimate and a brief statement on each proposed sidewalk.

# **Existing Conditions**

Moretown Elementary School currently has a sidewalk in very good condition that leads from Vermont Route 100B to the stairs at the historic front entrance. There is additional sidewalk along the northern and eastern sides of the parking lot that leads to the new entrance on the north side of the school, but this sidewalk does not connect to Vermont Route 100B; is in very poor condition; and lacks truncated dome warning devices.

Two vehicular driveways provide access from Vermont Route 100B to the school. One is located next to the Town Clerk's office and has a paved width of 22 feet. The other is located between the school and the adjacent church and is approximately 15 feet wide. The schools' parking lot has a drainage swale that runs north through it, which drains into the field east of the Town Clerk's office, as well as several storm drains.

## **Alignments**

Six proposed sidewalk routes have been considered. These are:

- 1. An curbed sidewalk along the south side of the driveway adjacent to the Town Clerk's Office, then along the western edge of the school parking lot towards the existing sidewalk on the north side of the school.
- 2. A curbed sidewalk following the driveway located between the school and the adjacent church, which would lead to the existing sidewalk and to the entrance on the north side of the school.

- 3. A curbed sidewalk following the driveway adjacent to the Town Clerk's office, then following the northern and eastern edges of the parking lot to join the existing sidewalk, and then towards the entrance on the north side of the school.
- 4. A combination of curbed and uncurbed sidewalk that parallels the driveway adjacent to the Town Clerk's office, but which passes on the northern side of the office, and then follows the northern and eastern edges of the parking lot to join the existing sidewalk.
- 5. An uncurbed sidewalk along the southern edge of the school utilizing the south entrance to the school.
- 6. Simply using the existing sidewalk that leads from VT 100B to the historic front entrance of the school

## **Estimates**

DuBois & King has developed cost estimates for the construction of new sidewalks at the elementary school. An estimate for the reconstruction of the existing sidewalk at the north entrance to the school that is in poor condition has also been included. The estimates were prepared using the latest copy of the VTrans 2-year Averaged Price List and the prepared conceptual plan. It has been assumed that no right of way acquisition will be necessary and that any sidewalks would be constructed on land owned by the Town or school. Design and inspection costs were estimated to be approximately 20% and 10% of the construction costs respectively. The total estimated cost of constructing each sidewalk alternative is presented in the following table. More detailed breakdowns of the construction estimates are attached.

Description	Construction	Engineering	Inspection	Total
Option 1 - New Sidewalk on south side of Town				
Clerk and west side of school parking lot	\$73,000	\$14,600	\$7,300	\$94,900
Option 2 - New sidewalk between school and				
church	\$32,000	\$6,400	\$3,200	\$41,600
Option 3 - New sidewalk on south side of Town				
Clerk and north/east side of school parking lot	\$81,000	\$16,200	\$8,100	\$105,300
Option 4 - New sidewalk on north side of Town				
Clerk and north/east side of school parking lot	\$60,000	\$12,000	\$6,000	\$78,000
Option 5 - New sidewalk on south side of school	\$40,000	\$8,000	\$4,000	\$52,000
Option 6 – Existing Sidewalk to front of school	\$0	\$0	\$0	\$0
Reconstruct Existing Sidewalk at north entrance	\$62,000	\$12,400	\$6,200	\$80,600

## **Discussion**

The choice of sidewalk alignments is largely dependant upon which entrance to the school is determined to be the best for the safety and security of the students. Other factors that should be considered are costs, impacts to vehicular traffic circulation, and safety.

Option 1 would follow the south side of the driveway adjacent to the Town Clerk's office, and then the western edge of the existing school parking lot to the north entrance of the school. It avoids the falling ice hazard between the school and the church, and is shorter overall than the other options that follow the edge of the parking lot to join with the existing school sidewalk. The driveway adjacent to the Town Clerk's office is already narrow at 22 feet. There is approximately 26 feet between the guard rail adjacent to the Town Clerk's office and the fence along the driveway. Adding a sidewalk would most likely require narrowing the driveway to approximately 19 feet. Ledge was observed near the northwestern corner of the parking lot, and this would need to be removed in order to maintain the width of the drive. This option will require narrowing the driveway by the Town Clerk's office to approximately 19 feet. Students and motorists will need to be careful where this route crosses the drive by the church.

This option provides a shorter walking path to the main entrance than some of the other options, but students may still be tempted to leave the sidewalk and walk to the entrance through the parking lot.

Option 2, which would follow the drive between the church and school, would narrow the existing driveway from 15 feet to 10 feet, and would require that vehicular traffic be restricted to one direction. Vehicles entering the driveway would need to watch for pedestrians accessing the sidewalk or walking adjacent to it. A second point of vehicle/pedestrian conflict would occur near the signed handicap parking spaces located near the entrance approximately 120 feet from Vermont Route 100B. Signs currently warn of falling snow and ice in this drive, and placing a sidewalk here would subject pedestrians to these hazards. This option appears to be located on school property but would require deed research to confirm.

Option 3 is more expensive than the first two since it is longer. This option will require narrowing the driveway by the Town Clerk's office to approximately 19 feet. This alignment would cross the parking spaces at the Town Clerk's office and the access road to the recreational fields, creating points of vehicle and pedestrian conflict. This alignment, as well as Option 4, does not lead pedestrians to the school entrance in a straight line. Pedestrians may choose to shortcut through the parking lot rather than remaining on the sidewalk, creating additional pedestrian and vehicle conflicts. This option appears to require the use of private property to relocate the driveway.

Option 4 would also be expensive, but would pose fewer challenges related to vehicular traffic since it would avoid the existing driveway. Pedestrians would still need to cross the access road to the recreational fields, and drainage structures would be required where the sidewalk crosses the existing swale. This option appears to avoid encroachment onto private property.

Option 5 would be in the middle of the estimated price range and would avoid pedestrian and vehicular conflicts. It would route pedestrians close to the utility connections for the building, and be difficult to see portions of the sidewalk from the roadway. This option would use the south entrance to the school and would have greater impacts on the landscaped vegetation than any of the other options. This option appears to be located entirely on the school's property.

Option 6 is to use the existing sidewalk that makes a direct connection between the sidewalk along VT 100B and the school's front entrance. The sidewalk is in good condition and could be used as is, if the school was to determine the front entrance is appropriate for use.

The existing sidewalks adjacent to the school parking lot are in very poor condition. These should be reconstructed regardless of the new option chosen due to the tripping hazard that they pose.

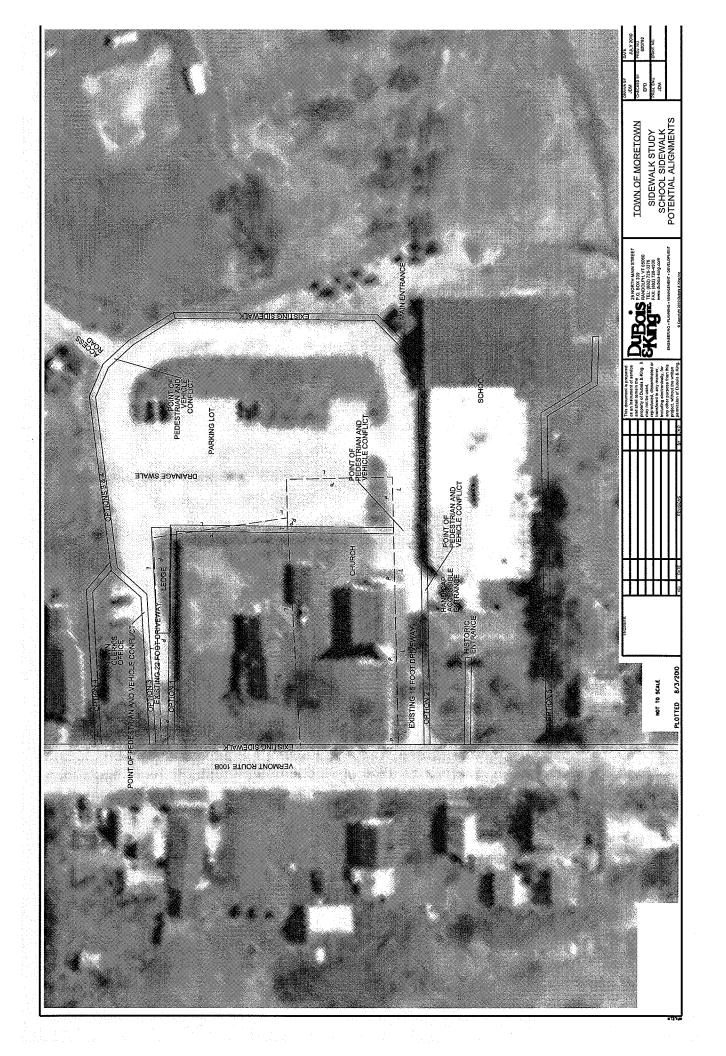
If you have any questions about our estimate, conceptual plan or analysis, please do not hesitate to call me at (802) 728-3376.

Very truly yours, DuBOIS & KING, INC.

Evan P. Detrick, P.E. Project Manager

Encl.





		JOB 620	620782 Moretown Sidewalk Study					
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ENGINEER'S PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST								
NEW FRONT ENTRANCE - PCC SIDEWALK GOING PAST TOWN CLERK ON SOUTH SIDE								
ITEM NO.	DESCRIPTION		UNIT	QUANT.	UNIT PRICE	AMOUNT		
201.11	CLEARING AND GRUBBING, INCL. INDV. TREES AND STU	MPS	LS	1.0	\$500.00	\$500.00		
203.15	COMMON EXCAVATION		CY	155.0	\$7.00	\$1,085.00		
203.16	SOLID ROCK EXCAVATION		CY	90.0	\$20.00	\$1,800.00		
301.15	SUBBASE OF GRAVEL		CY	155.0	\$28.00	\$4,340.00		
406.25	BITUMINOUS CONCRETE PAVEMENT		Т	55.0	\$150.00	\$8,250.00		
616.21	VERTICAL GRANITE CURB		LF	360.0	\$38.00	\$13,680.00		
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH		SY	205.0	\$75.00	\$15,375.00		
618.30	DETECTABLE WARNING SURFACE		SF	30.0	\$50.00	\$1,500.00		
631.16	TESTING EQUIPMENT, CONCRETE		LS	1.0	\$900.00	\$900.00		
631.17	TESTING EQUIPMENT, BITUMINOUS		LS	1.0	\$650.00	\$650.00		
635.11	MOBILIZATION/DEMOBILIZATION		LS	1.0	\$7,500.00	\$7,500.00		
641.10	TRAFFIC CONTROL		LS	1.0	\$2,500.00	\$2,500.00		
651.15	SEED		LB	2.5	\$10.00	\$25.00		
651.18	FERTILIZER		LB	25.0	\$3.00	\$75.00		
651.20	AGRICULTURAL LIMESTONE		T	0.10	\$500.00	\$50.00		
651.25	HAY MULCH		T	0.10	\$600.00	\$60.00		
651.35	TOPSOIL		CY	15.0	\$25.00	\$375.00		
652	EROSION CONTROL		LS	1.0	\$2,000.00	\$2,000.00		
		1 1 1		1				
0.10					<b>#</b>	<b>-</b> 00		
	SUBTOTAL \$60,665.00							
	INGENCY (20%)				\$12,133 \$72,798	2.00		
TOTA	<u>L</u>				· · · · · ·	5.00		
	USE		\$73	,000.	00			
Surface Mate	rial: PCC Length 360 ft Cost	per foot:	\$203					

Sunface Mate	iol. DCC Longth 165 ft Conf	unan facet.	£10 <i>4</i>							
	USE \$32,000.00									
TOTA					\$31,27					
SUBTOTAL \$26,062.00 CONTINGENCY (20%) \$5,212.40										
SHRT	OTAL				\$26,062	2 00				
652	EROSION CONTROL		LS	1.0	\$2,000.00	\$2,000.00				
651.35	TOPSOIL		CY	6.0	\$25.00	\$150.00				
651.25	HAY MULCH		T	0.05	\$600.00	\$30.00				
651.20	AGRICULTURAL LIMESTONE		T	0.05	\$500.00	\$25.00				
651.18	FERTILIZER		LB	10.0	\$3.00	\$30.00				
651.15	SEED		LB	1.2	\$10.00	\$12.00				
641.10	TRAFFIC CONTROL		LS	1.0	\$2,500.00	\$2,500.00				
635.11	MOBILIZATION/DEMOBILIZATION		LS	1.0	\$2,500.00	\$2,500.00				
631.17	TESTING EQUIPMENT, BITUMINOUS		LS	1.0	\$650.00	\$650.00				
631.16	TESTING EQUIPMENT, CONCRETE		LS	1.0	\$900.00	\$900.00				
618.30	DETECTABLE WARNING SURFACE		SF	20.0	\$50.00	\$1,000.00				
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH		SY	95.0	\$75.00	\$7,125.00				
616.21	VERTICAL GRANITE CURB		LF	165.0	\$38.00	\$6,270.00				
406.25	BITUMINOUS CONCRETE PAVEMENT		T	6.0	\$150.00	\$900.00				
301.15	SUBBASE OF GRAVEL		CY	40.0	\$28.00	\$1,120.00				
203.15	COMMON EXCAVATION		CY	50.0	\$7.00	\$350.00				
201.11	CLEARING AND GRUBBING, INCL. INDV. TREES AND STU	JMPS	LS	1.0	\$500.00	\$500.00				
ITEM NO.	DESCRIPTION		UNIT	QUANT.	UNIT PRICE	AMOUNT				
NEW ENTRANCE - PCC SIDEWALK GOING PAST CHURCH										
EN	ENGINEER'S PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST									
		SCALE:								
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		JOB 620782 Moretown Sidewalk Study								

		JOB 620782 Moretown Sidewalk Study							
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	<b>19</b>	CALCULATE	D BY:	JE	DM DA	TE: 30-Jul-10			
Engineerir	ng • Planning • Development • Management	Y:	EF	PD DA	TE:				
		SCALE:							
EN	ENGINEER'S PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST								
NEW FRONT ENTRANCE - PCC SIDEWALK GOING PAST TOWN CLERK ON SOUTH SIDE									
ITEM NO.	DESCRIPTION		UNIT	QUANT.	UNIT PRICE	AMOUNT			
201.11	CLEARING AND GRUBBING, INCL. INDV. TREES AND STU	MPS	LS	1.0	\$500.00	\$500.00			
203.15	COMMON EXCAVATION		CY	165.0	\$7.00	\$1,155.00			
203.16	SOLID ROCK EXCAVATION		CY	90.0	\$20.00	\$1,800.00			
301.15	SUBBASE OF GRAVEL		CY	165.0	\$28.00	\$4,620.00			
406.25	BITUMINOUS CONCRETE PAVEMENT		T	55.0	\$150.00	\$8,250.00			
616.21	VERTICAL GRANITE CURB		LF	400.0	\$38.00	\$15,200.00			
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH		SY	225.0	\$75.00	\$16,875.00			
618.30	DETECTABLE WARNING SURFACE		SF	20.0	\$50.00	\$1,000.00			
631.16	TESTING EQUIPMENT, CONCRETE		LS	1.0	\$900.00	\$900.00			
631.17	TESTING EQUIPMENT, BITUMINOUS		LS	1.0	\$650.00	\$650.00			
635.11	MOBILIZATION/DEMOBILIZATION		LS	1.0	\$6,000.00	\$6,000.00			
641.10	TRAFFIC CONTROL		LS	1.0	\$2,500.00	\$2,500.00			
651.15	SEED		LB	3.0	\$10.00	\$30.00			
651.18	FERTILIZER		LB	25.0	\$3.00	\$75.00			
651.20	AGRICULTURAL LIMESTONE		Т	0.10	\$500.00	\$50.00			
651.25	HAY MULCH		Т	0.10	\$600.00	\$60.00			
651.35	TOPSOIL		CY	13.0	\$25.00	\$325.00			
652	EROSION CONTROL		LS	1.0	\$2,000.00	\$2,000.00			
	CATCH BASIN		LS	1.0	\$5,000.00	\$5,000.00			
SUBTOTAL \$66,990.00									
CONTINGENCY (20%) \$13,398.00									
TOTA					\$80,38	3.00			
	USE		\$81	,000.	00				
Surface Mater	rial: PCC Length 400 ft Cost	per foot:	\$203						

		JOB 620782 Moretown Sidewalk Study						
Due	Randolph, VT 05060 (802) 728-3376  Bedford, NH 03110 (603) 883-0463	SHEET NO.		4	OF	6		
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Engineeri	ng • Planning • Development • Management	Y:	E	DD DA	TE:			
ENGINEER'S PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST								
NEW FRONT ENTRANCE - PCC SIDEWALK GOING PAST TOWN CLERK ON NORTH SIDE								
ITEM NO.	DESCRIPTION		UNIT	QUANT.	UNIT PRICE	AMOUNT		
201.11	CLEARING AND GRUBBING, INCL. INDV. TREES AND STU	JMPS	LS	1.0	\$500.00	\$500.00		
203.15	COMMON EXCAVATION		CY	105.0	\$7.00	\$735.00		
301.15	SUBBASE OF GRAVEL		CY	80.0	\$28.00	\$2,240.00		
406.25	BITUMINOUS CONCRETE PAVEMENT		Т	10.0	\$150.00	\$1,500.00		
616.21	VERTICAL GRANITE CURB	LF	245.0	\$38.00	\$9,310.00			
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH	, <del></del>	SY	225.0	\$75.00	\$16,875.00		
618.30	DETECTABLE WARNING SURFACE	SF	20.0	\$50.00	\$1,000.00			
631.16	TESTING EQUIPMENT, CONCRETE		LS	1.0	\$900.00	\$900.00		
631.17	TESTING EQUIPMENT, BITUMINOUS	· · · · · · · · · · · · · · · · · · ·	LS	1.0	\$650.00	\$650.00		
635.11	MOBILIZATION/DEMOBILIZATION		LS	1.0	\$6,000.00	\$6,000.00		
641.10	TRAFFIC CONTROL		LS	1.0	\$2,500.00	\$2,500.00		
651.15	SEED		LB	3.0	\$10.00	\$30.00		
651.18	FERTILIZER		LB	25.0	\$3.00	\$75.00		
651.20	AGRICULTURAL LIMESTONE		Т	0.10	\$500.00	\$50.00		
651.25	HAY MULCH		Т	0.10	\$600.00	\$60.00		
651.35	TOPSOIL	***************************************	CY	13.0	\$25.00	\$325.00		
652	EROSION CONTROL		LS	1.0	\$2,000.00	\$2,000.00		
	CATCH BASIN		LS	1.0	\$5,000.00	\$5,000.00		
SUBT	OTAL				\$49,750	0.00		
CONTINGENCY (20%) \$9,950.00								
TOTA					\$59,70	0.00		
	USE		\$60	,000,	00			
Surface Mate	rial: PCC Length 400 ft Cost	per foot:	\$150					

JOB								JOB 620782 Moretown Sidewalk Study							
DuBo	Randolph, VT 05060 (802) 728-3376  Bedford, NH 03110 (603) 883-0463  Williston, VT 05495 (802) 878-7661					SHE	EET N	10.		<u> </u>		6			
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SCALE:															
ENGINEER'S PRELIMINARY ESTIMATE OF PROBABLE CONSTRUCTION COST															
UNCURBED PCC SIDEWALK ON SOUTH SIDE OF SCHOOL															
ITEM NO. D	DESCRIP	TION										UNIT	QUANT.	UNIT PRICE	AMOUNT
201.11 CI	CLEARING AND GRUBBING, INCL. INDV. TREES AND STUMPS									LS	1.0	\$3,000.00	\$3,000.00		
203.15 C	COMMON EXCAVATION									CY	85.0	\$7.00	\$595.00		
301.15 SI	SUBBASE	OF (	GRAVEL									CY	55.0	\$28.00	\$1,540.00
618.10 PC	PORTLAN	D CE	MENT C	ONCRET	E SIDEWA	LK, 5 l	INCH	1				SY	225.0	\$75.00	\$16,875.00
618.30 DI	DETECTA	BLE	WARNIN	IG SURFA	CE							SF	10.0	\$50.00	\$500.00
631.16 TE	ESTING	EQU	IPMENT,	CONCRE	:TE							LS	1.0	\$900.00	\$900.00
631.17 TI	ESTING	EQU	IPMENT,	BITUMIN	ous			······				LS	1.0	\$650.00	\$650.00
635.11 M	//OBILIZA	TION	I/DEMOE	BILIZATIO	4							LS	1.0	\$5,000.00	\$5,000.00
641.10 TI	RAFFIC	CON	TROL									LS	1.0	\$500.00	\$500.00
651.15 SI	SEED											LB	10.0	\$10.00	\$100.00
651.18 FE	ERTILIZE	ΞR									$\Box$	LB	70.0	\$3.00	\$210.00
651.20 A	AGRICUL'	TUR/	AL LIMES	STONE				<del></del>				T	0.30	\$500.00	\$150.00
651.25 H	AY MUL	СН										T	0.30	\$600.00	\$177.30
651.35 TO	OPSOIL	······				***************************************		·····	*****			CY	40.0	\$25.00	\$1,000.00
652 EI	ROSION	CON	ITROL									LS	1.0	\$2,000.00	\$2,000.00
SUBTO														\$33,19	
CONTINGENCY (20%)										\$6,63					
TOTAL														\$39,83	36.76
		US	SE.									\$40	,000.	00	
Surface Material	al:		PCC	Length	400	ft	t	Cost	per foot	:		100			

Note:

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Due	□ Randolph, VT 05060 (802) 728-3376 □ Bedford, NH 03110 (603) 883-0463 □ Williston, VT 05495 (802) 878-7661	SHEET NO.		6	OF	6		
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EN	IGINEER'S PRELIMINARY ESTIMATE (	SCALE: DF PROBAB	LE C	ONSTI	RUCTION	COST		
RECONSTRUCT EXISTING DAMAGED SIDEWALK								
ITEM NO.	DESCRIPTION	UNIT	QUANT.	UNIT PRICE	AMOUNT			
201.11	CLEARING AND GRUBBING, INCL. INDV. TREES AND STU	JMPS	LS	1.0	\$500.00	\$500.00		
203.15	COMMON EXCAVATION		CY	110.0	\$7.00	\$770.00		
301.15	SUBBASE OF GRAVEL		CY	90.0	\$28.00	\$2,520.00		
406.25	BITUMINOUS CONCRETE PAVEMENT		T	15.0	\$150.00	\$2,250.00		
616.21	VERTICAL GRANITE CURB		LF	370.0	\$38.00	\$14,060.00		
618.10	PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH	SY	210.0	\$75.00	\$15,750.00			
618.30	DETECTABLE WARNING SURFACE	SF	50.0	\$50.00	\$2,500.00			
631.16	TESTING EQUIPMENT, CONCRETE	LS	1.0	\$900.00	\$900.00			
631.17	TESTING EQUIPMENT, BITUMINOUS	LS	1.0	\$650.00	\$650.00			
635.11	MOBILIZATION/DEMOBILIZATION		LS	1.0	\$6,000.00	\$6,000.00		
641.10	TRAFFIC CONTROL		LS	1.0	\$2,500.00	\$2,500.00		
651.15	SEED		LB	3.0	\$10.00	\$30.00		
651.18	FERTILIZER		LB	25.0	\$3.00	\$75.00		
651.20	AGRICULTURAL LIMESTONE		Т	0.10	\$500.00	\$50.00		
651.25	HAY MULCH		Т	0.10	\$600.00	\$60.00		
651.35	TOPSOIL		CY	15.0	\$25.00	\$375.00		
652	EROSION CONTROL		LS	1.0	\$2,000.00	\$2,000.00		
SUBT					\$50,99			
	INGENCY (20%)				\$10,19			
TOTA					\$61,18	3.00		
	USE THE RESERVE TO TH		\$62	,000.	00			
Surface Mate	ial: PCC Length 400 ft Cost	per foot:	\$155					