

PRELIMINARY REPORT OF ENGINEER

on

ANOKA COUNTY DITCH No. 27

Submitted by

J. George Dean

Minnesota Registered Professional Engineer Lic.#2939

Soil Conservation Service Area Engr.

Buffalo, Minn.

PRELIMINARY REPORT OF ENGINEER

County Ditch 27, Anoka County, Minnesota

TO THE COUNTY BOARD IN AND FOR SAID ANOKA COUNTY:

I, the undersigned Civil Engineer, heretofore appointed as engineer in the above proceedings which proposes to clean out, improve, resection and generally improve said County Ditch, hereby report that I have complied with your order made and entered in said matter on March 1, 1948 viz:

FIRST - I took the oath and gave bond required by law, which said bond has been duly approved by the County Auditor and which said bond and oath are now on file in his office.

SECOND - I made an examination and an accurate survey of the proposed main ditch and of the lateral and two sub-laterals and caused stakes to be set along the line of each, numbered progressively down stream at each 100 feet.

THIRD:- From the examination of the land in the vicinity of the proposed ditch I find that there are large tracts of land in the immediate vicinity of the said proposed ditch aggregating more than 645 acres which, because of their low and wet conditions, are practically useless, and that if these lands were properly drained much of the same would be reclaimed and rendered useful for agricultural purposes. That, in addition to the above described lands, there are other tracts which, while higher than those adjacent to the ditch, are nevertheless too wet and do not possess the proper drainage facilities to make them susceptible of full use for agricultural purposes, that if proper drainage were provided for the low swamp lands these higher lands would be afforded better drainage and would become more valuable.

(over)

I determined the drainage area or watershed of this project and drew the watershed map, with outlying boundary, interior ridges and property lines and land owners' names, according to Section, Township and range. After locating the said ditch, including the main and laterals #1, #1-a and #1-b, I took levels at each 100 feet stake and at such intermediate points along the line as I considered necessary and therefrom prepared the profile, which is shown on sheets 2 to 9 inclusive of the plans. This plan profile shows the present ground elevation of both ditch bottom and bank, established grade of the proposed ditch flow line, designed hydraulic grade line, maximum 25 years peak flow grade line, at critical points, sizes and lengths of highway culverts required and estimated yardage between arbitrary points such as property lines and highways. This plan, including the drainage area map and ~~the~~<sup>sight</sup> profile plan sheets, are made a part of this report.

A tabular statement, Exhibit II, giving the width on the bottom, ~~the~~  
~~depth of cut, and the width on the top~~ at ruling points along the line, estimated excavation between these points and summation of yardage at above mentioned arbitrary points for the Main Ditch, Lateral #1, and Sub-laterals #1-a and #1-b, is made a part of this report.

FOURTH - The center line of the Main Ditch, Lateral #1, and Sub-laterals #1-a and #1-b corresponds to the description as set forth in Exhibit I and as shown on the watershed map which is Sheet I of the plans as prepared by me and which is made a part of this report.

FIFTH - In taking the levels along the line of said ditch and its laterals, I established bench marks for use on future levels. These bench marks with location, description, and elevation are given on the plan profile, sheets 2 to 9 of the plans.

(over)


SIXTH - I have prepared a tabular statement of the required tree removal, Exhibit III, and the required fence removal, Exhibit IV, with estimated cost. These exhibits are made a part of this report.

SEVENTH - I have prepared a statement showing the total estimated cost of laying out, establishing, and constructing the said ditch, including all preliminary and other expenses connected therewith, which statement is hereto attached as Exhibit V, and is made a part of this report.

NINTH - I further certify that the route of the Main Ditch, Lateral No. 1 and Sub-laterals #1-a and #1-b, as located by me, are each and all practicable; that if the said ditch, including said laterals, is constructed, the same will reclaim, drain, and improve large tracts of land in the vicinity thereof; and that, by the construction of the said ditch, the accumulation of foul and stagnant waters upon said lands will be prevented and thereby the public health will be promoted.

I, therefore, recommend consideration for the construction of the said ditch.

March 24, 1949.  
Date

  
J. George Dean  
Civil Engineer

LISTING OF EXHIBITS AND PLANS

Attached to Preliminary Report on Anoka County Ditch No. 27

- I. Description of ditch
- II. Dimension, Yardage and Excavation Cost
- III. Tree, Stump and Brush Removal Tabulation and Cost
- IV. Fence Removal Tabulation and Cost
- V. Cost Tabulation

Plans of Anoka County Ditch No. 27

Watershed Area Map . . . . . Sheet I

Plan Profile . . . . . Sheets 2 to 9 inclusive

Description of main ditch is as follows:

Starting at a point on the N  $\frac{1}{4}$  Sec. line, 270 feet north of the southwest corner of the N.E.  $\frac{1}{4}$  of the N.E.  $\frac{1}{4}$  of Sec. 32, Burns Township, (T-33-14, R-25-W)

- thence S 51<sup>o</sup>45' E a distance of 332 feet;
- thence S 71<sup>o</sup>47' E a distance of 181 feet;
- thence N 89<sup>o</sup>48' E a distance of 885 feet;
- thence S 0<sup>o</sup>45' E a distance of 1307 feet;
- thence S 89<sup>o</sup>40' E a distance of 191 feet;
- thence S 1<sup>o</sup>51' E a distance of 674 feet;
- thence S 35<sup>o</sup>06' W a distance of 797 feet, which point is on the S  $\frac{1}{4}$  line of Sec. 32, aforesaid, 259' west of the SE corner of the NW  $\frac{1}{4}$  of the SW  $\frac{1}{4}$  of said section;
- thence S 89<sup>o</sup>56' W a distance of 2371 feet;
- thence S 1<sup>o</sup>14' E a distance of 710 feet;
- thence S 26<sup>o</sup>45' W a distance of 144 feet;
- thence S 1<sup>o</sup>43' W a distance of 615 feet;
- thence S 61<sup>o</sup>35' W a distance of 571 feet;
- thence S 4<sup>o</sup>23' E a distance of 1179 feet;
- thence S 65<sup>o</sup>58' E a distance of 451 feet;
- thence N 84<sup>o</sup>35' E a distance of 847 feet;
- thence N 84<sup>o</sup>15' E a distance of 608 feet;
- thence S 88<sup>o</sup>20' E a distance of 554 feet;
- thence S 83<sup>o</sup>25' E a distance of 438 feet;
- thence S 75<sup>o</sup>12' E a distance of 271 feet;
- thence S 66<sup>o</sup>28' E a distance of 225 feet;
- thence S 61<sup>o</sup>51' E a distance of 338 feet;
- thence S 81<sup>o</sup>55' E a distance of 442 feet

Main cont'd.

- thence N  $89^{\circ}56'$  E a distance of 307 feet, which point is the entrance of and junction with Lateral No. I;
- thence S  $51^{\circ}53'$  E a distance of 2450 feet;
- thence N  $74^{\circ}31'$  E a distance of 258 feet;
- thence N  $31^{\circ}45'$  E a distance of 218 feet;
- thence S  $80^{\circ}45'$  E a distance of 245 feet;
- thence S  $20^{\circ}45'$  E a distance of 198 feet;
- thence N  $68^{\circ}16'$  E a distance of 599 feet;
- thence S  $85^{\circ}06'$  E a distance of 356 feet;
- thence N  $51^{\circ}33'$  E a distance of 1290 feet;
- thence N  $54^{\circ}56'$  E a distance of 627 feet;
- thence S  $77^{\circ}28'$  E a distance of 238 feet;
- thence S  $32^{\circ}06'$  E a distance of 251 feet;
- thence S  $23^{\circ}25'$  E a distance of 270 feet;
- thence S  $53^{\circ}15'$  E a distance of 303 feet;
- thence S  $13^{\circ}05'$  E a distance of 346 feet;
- thence S  $1^{\circ}42'$  W a distance of 480 feet;
- thence S  $87^{\circ}25'$  E a distance of 438 feet;
- thence N  $58^{\circ}08'$  E a distance of 174 feet;
- thence N  $68^{\circ}15'$  E a distance of 351 feet;
- thence N  $51^{\circ}21'$  E a distance of 339.5 feet;
- thence S  $5^{\circ}42'$  W a distance of 657.5 feet, which point is the outlet of the main ditch and is on the south  $\frac{1}{4}$  line of Sec. 3 Ramsey Township, T-32-N, R-25-W, 1320 feet south and 430 feet east of the center of said Section, aforesaid.

Description of Lateral No. I is as follows:

Starting at a point on the east-west center line of Sec. 33,  
Burns Township, T-33-N, R-25-W, 620 feet W of NE corner of the  
NW $\frac{1}{4}$  of the SE $\frac{1}{4}$ ;

thence S 8<sup>o</sup> 50' E a distance of 300 feet, at which point  
sub-lateral No. 1-b enters;

thence S 13<sup>o</sup> 12' W a distance of 1042 feet;

thence S 89<sup>o</sup> 08' W a distance of 444 feet;

thence S 0<sup>o</sup> 57' E a distance of 1471 feet, at which point  
sub-lateral No. I-a enters;

thence S 88<sup>o</sup> 20' W a distance of 805 feet;

thence S 22<sup>o</sup> 34' W a distance of 1779 feet;

thence S 19<sup>o</sup> 38' E a distance of 329 feet, which is the  
point at which Lateral No. 1 ends and joins the  
main ditch.

Description of Sub-Lateral No. I-a is as follows:

Starting at a point 700 feet south and 200 feet east of the NW  
corner of the NE $\frac{1}{4}$  of the NE $\frac{1}{4}$  of Sec. 4, Ramsey Township, T-32-N, R-25-W;

thence N 86<sup>o</sup> 27' W a distance of 484 feet;

thence S 64<sup>o</sup> 27' W a distance of 309 feet;

thence S 83<sup>o</sup> 28' W a distance of 754 feet;

thence N 0<sup>o</sup> 03' E a distance of 768 feet, which is the  
point at which sub-lateral No. I-a ends and joins  
Lateral No. I

Description of Sub-Lateral No. I-b is as follows:

Starting at a point on the common line between Sec. 33 and 34,  
Burns Township, T-33-N, R-25-W, 530 feet south of the NE corner of  
the NW $\frac{1}{4}$  of SE $\frac{1}{4}$  of Sec. 33, Burns Township, T-33-N, R-25-W;

thence S 71<sup>o</sup> 42' W a distance of 840 feet;



thence N  $39^{\circ}11'$  W a distance of 432 feet;

thence N  $64^{\circ}19'$  W a distance of 281 feet;

thence N  $86^{\circ}45'$  W a distance of 569 feet, which is the point  
at which sub-lateral No. I-b ends and joins lateral No. I.

TABULATION OF YARDAGE AND EXCAVATION ESTIMATED COST  
For Anoka County Ditch No. 27

Line	Sta to Sta	Bottom width-ft.	Excavation Cu.Yds.	Estimated Cost Per Cu.Yd.	Total
Main	100 <del>/</del> 00 to 128 <del>/</del> 00	4.0	5285		
	128 <del>/</del> 00 to 142 <del>/</del> 63	4.0	4735		
	142 <del>/</del> 63 to 152 <del>/</del> 78	4.0	4680		
	152 <del>/</del> 78 to 164 <del>/</del> 68	4.0	3189		
	164 <del>/</del> 68 to 177 <del>/</del> 14	4.0	7215		
	County Highway	-	163		
	177 <del>/</del> 80 to 200 <del>/</del> 00	4.0	) 8219		
	200 <del>/</del> 00 to 202 <del>/</del> 23	5.0			
	202 <del>/</del> 23 to 215 <del>/</del> 00	5.0		4377	
	215 <del>/</del> 00 to 227 <del>/</del> 61	5.0	5184		
	227 <del>/</del> 61 to 241 <del>/</del> 22	5.0	4313		
	241 <del>/</del> 22 to 249 <del>/</del> 00	6.0	3083		
	249 <del>/</del> 00 to 257 <del>/</del> 50	6.0	3495		
	257 <del>/</del> 50 to 265 <del>/</del> 53	6.0	3301		
	265 <del>/</del> 53 to 274 <del>/</del> 02	6.0	5376		
	274 <del>/</del> 02 to 287 <del>/</del> 63	6.0	5796		
	287 <del>/</del> 63 to 295 <del>/</del> 98	6.0	2980		
	295 <del>/</del> 98 to 303 <del>/</del> 80	6.0	2976		
	303 <del>/</del> 80 to 327 <del>/</del> 25	6.0	11037		
	County Highway	-	107		
328 <del>/</del> 00 to 340 <del>/</del> 10	6.0	3268			
	Total		88779	\$0.17	\$15092.43
Lat #1	0-50 to 13 <del>/</del> 27	4.0	3675		
	13 <del>/</del> 27 to 18 <del>/</del> 40	4.0	1480		
	18 <del>/</del> 40 to 30 <del>/</del> 33	4.0	3381		
	County Highway	-	70		
	30 <del>/</del> 80 to 61 <del>/</del> 74	4.0	11767		
			20373	\$0.17	\$ 3463.41
Lat #1-a	0 <del>/</del> 00 to 2 <del>/</del> 43	4.0	693		
	2 <del>/</del> 43 to 15 <del>/</del> 20	4.0	5738		
	15 <del>/</del> 20 to 22 <del>/</del> 82	4.0	2518		
			8949	\$0.17	\$ 1521.33
Lat #1-b	0 <del>/</del> 00 to 7 <del>/</del> 77	4.0	2495		
	County Highway	-	58		
	8 <del>/</del> 17 to 15 <del>/</del> 32	4.0	3363		
	15 <del>/</del> 32 to 20 <del>/</del> 74	4.0	1825		
			7741	\$0.17	\$ 1315.97
Total all lines			125842	\$0.17	\$21393.14

TABULATION OF SPOILS SPREADING AND COST

Line	Estimated yardage	Spoils spreading (yardage x 2/3)	Estimated Cost Cost/cu.yd.	Estimated Cost Total
Main	88779	59186	\$0.03	\$1775.58
Lat #1	20373	13582	0.03	407.46
Lat #1-a	8949	5966	0.03	178.98
Lat #1-b	7741	5160	0.03	154.80
	<u>125842</u>	<u>83894</u>		
			Total all lines	\$ 2516.82

TREE, STUMP, AND BRUSH REMOVAL TABULATION AND COST

Line	Item	No.	Size	Unit	Estimated cost		
					Unit	Total	
Main	Trees (live)	100	3-6	each	\$ 0.75	\$ 75.00	
		51	6-9	"	1.50	76.50	
		26	9-12	"	3.00	78.00	
		38	12-18	"	4.50	171.00	
		10	18-24	"	7.00	70.00	
		13	24-36	"	10.00	130.00	
		1	40"	"	12.00	12.00	
		3	48"	"	16.00	48.00	
	Trees (dead)	7	3-6	"	0.35	2.45	
		5	6-9	"	0.75	3.75	
		3	12-18	"	2.25	6.75	
		1	18-24	"	3.50	3.50	
		Stumps	52		"	1.25	65.00
		Brush	23300		100 sq.ft.	0.25	<u>58.25</u>
	Total for Main						\$ 800.20
Lat. #I	Trees (live)	42	3-6	each	0.75	31.50	
		19	6-9	"	1.50	28.50	
		5	9-12	"	3.00	15.00	
		3	12-18	"	4.50	13.50	
		1	18-24	"	7.00	7.00	
	Trees (dead)	16	3-6	"	0.35	5.60	
		19	6-9	"	0.75	14.25	
		12	9-12	"	1.50	18.00	
		5	12-18	"	2.25	11.25	

Line	Item	No.	Size	Unit	Estimated cost		
					Unit	Total	
		1	18-24	each	\$ 3.50	\$ 3.50	
	Brush	34525		100 sq.ft.	0.25	<u>86.31</u>	
			Total for Lat. #I				\$234.41
Lat. #1-a	Trees (dead)	7	3-6	each	.35	2.45	
		6	9-12	"	3.00	18.00	
		1	18-24	"	7.00	7.00	
		3	24-36	"	10.00	30.00	
	Stumps	12		"	1.25	15.00	
	Brush	25860		100 sq.ft.	0.25	<u>64.65</u>	
			Total for Lat. #1-a				\$137.10
Lat. #1-b	Trees (live)	2	3-6	each	.75	1.50	
		1	12-18	"	4.50	4.50	
	Stumps	112		"	1.25	140.00	
	Brush	54585		100 sq.ft.	0.25	<u>136.46</u>	
						<u>\$ 282.46</u>	
All lines - Total							<u>\$ 1454.17</u>

FENCE REMOVAL TABULATION AND COST

Line	Location	Type	Length		Estimated Cost	
			Feet	Rods	Unit	Total
Main	At Sta 103 <del>/</del> 85	Cross		70		
	Sta 103 <del>/</del> 80 to 112 <del>/</del> 80	Long	900			
	At Sta 113 <del>/</del> 98	Cross		50		
	At Sta 168 <del>/</del> 57	Cross		50		
	At Sta 177 <del>/</del> 14	Cross		15		
	Sta 164 <del>/</del> 86 <del>/</del> 177 <del>/</del> 14	Long	1328			
	At Sta 164 <del>/</del> 86	Cross		50		
	Sta 196 <del>/</del> 10 to 199 <del>/</del> 56	Long	346			
	Sta 208 <del>/</del> 90 to 214 <del>/</del> 28	Long	538			
	Sta 219 <del>/</del> 73 to 227 <del>/</del> 61	Long	788			
	At Sta 227 <del>/</del> 61	Cross		100		
	Sta 227 <del>/</del> 61 to 231 <del>/</del> 31	Long	370			
	Sta 231 <del>/</del> 31 to 232 <del>/</del> 98	Long	167			
	At Sta 232 <del>/</del> 98	Cross		80		
	At Sta 267 <del>/</del> 23	Cross		30		
	Sta 265 <del>/</del> 70 to 269 <del>/</del> 93	Long	423			
	At Sta 271 <del>/</del> 73	Cross		100		
	Sta 274 <del>/</del> 02 to 276 <del>/</del> 12	Long	210			
	At Sta 274 <del>/</del> 02	Ext		50		
	At Sta 276 <del>/</del> 12	Cross		50		
	At Sta 278 <del>/</del> 12	Cross		60		
	Sta 277 <del>/</del> 48 to 287 <del>/</del> 98	Long	1050			
	At Sta 288 <del>/</del> 05	Cross		100		
	At Sta 295 <del>/</del> 98	Cross		100		
	At Sta 306 <del>/</del> 99	Cross		100		
	At Sta 316 <del>/</del> 38	Cross		100		
	Sta 318 <del>/</del> 38 to 320 <del>/</del> 88	Long	250			
	Sta 320 <del>/</del> 88 to 323 <del>/</del> 48	Long	260			
	Sta 322 <del>/</del> 00 to 323 <del>/</del> 50	Long	150			
	At Sta 325 <del>/</del> 00	Long		90		
	At Sta 325 <del>/</del> 00	Cross		60		
	At Sta 326 <del>/</del> 62	Long & X		70		
	At Sta 326 <del>/</del> 78	Cross		100		
	At Sta 327 <del>/</del> 25	Cross		100		
	At Sta 327 <del>/</del> 80	Cross		100		
	Sta 327 <del>/</del> 60 to 328 <del>/</del> 00	Long	40			
	At Sta 328 <del>/</del> 00	Cross		100		
	At Sta 330 <del>/</del> 13	Cross		100		
			8645	524	\$0.20	\$104.80

(over)

Line	Location	Type	Length		Estimated Cost	
			Feet	Rods	Unit	Total
Lat #1	At Sta 0/00	Cross	100			
	At Sta 0/28	Cross	100			
	At Sta 13/40	Cross	50			
	Sta 13/40 to 18/96	Long	555			
	At Sta 18/96	Cross	50			
	Sta 18/96 to 30/91	Long	1195			
	At Sta 30/26	Cross	100			
			2150	130	\$0.20	\$26.00
Lat #1-a	At Sta 2/50	Cross	100			
	Sta 4/00 to 6/00	Long	200			
	At Sta 6/30	Cross	100			
	At Sta 12/40	Cross	50			
			450	27	\$0.20	\$ 5.40
Lat #1-b	At Sta 7/77	Cross	100			
	At Sta 8/17	Cross	50			
	Sta 8/40 to 12/70	Long	430			
	At 12/70	Cross	50			
	At Sta 15/32	Cross	100			
	At Sta 18/15	Cross	100			
			830	50	\$0.20	\$10.00
Total - all lines			<del>131</del>	731	0.20	\$ 146.20

TABULATION OF ESTIMATED COST  
Anoka County Ditch #27

Line	Item	Exhibit	Amount	Unit	Estimated Cost		
					Unit	Total	
Main	Ditch construction, Sta 100 <del>/</del> 00 to 340 <del>/</del> 10						
	Excavation	II	88779	Cu.yds.	0.17	\$15092.43	
	Spoil bank leveling	II	59186	"	0.03	1775.58	
	Clearing & grubbing trees and stumps	III	310	Units		741.95	
	Clearing brush	III	23300	Sq.Ft.	0.25/ 100 s.f.	58.25	
	Fence removal	IV	524	Rods	0.20	104.80	
	Farm crossing culvert at Sta 102 <del>/</del> 51						
	Remove 36"x18' RCP culvert		18	Feet	0.30	5.40	
	Lay 36"x18' " "		18	"	0.40	7.20	
	Back-fill on culvert		10	Cu.yds.	0.10	1.00	
	County Highway Culvert at Sta 177 <del>/</del> 47						
	Remove 30"x45' RCP culv.		45	Feet	0.25	11.25	
	Furnish 48"x68', #12 guage, 70 lbs./ft. CMP culvert		68	"	12.63	858.84	
	Furnish 48"x2' connecting band for above		2	Units	37.90	75.80	
	Lay 48"x68' CMP culvert		68	Feet	0.40	27.20	
	Back-fill on culvert		76	Cy.Yds.	0.10	7.60	
	Farm crossing culvert at Sta 271 <del>/</del> 47 or 275 <del>/</del> 02						
	Remove 36"x12' RCP culvert		12	Feet	0.30	3.60	
	Furnish 48"x40' RCP culvert		40	"	10.81	432.40	
	Lay 48"x40' RCP culvert		40	"	0.50	20.00	
	Back-fill on culvert		45	Cu.Yds.	0.10	4.50	
	County Highway culvert at Sta 327 <del>/</del> 43						
	Remove 4'x6'x34' arched top cone culvert		34	Feet	2.00	68.00	
	Furnish 60"x60', #10 guage, 110 lb./ft. CMP culvert		60	"	19.62	1177.20	
	Furnish 60"x2' connecting band for above		1	Unit	58.86	58.86	
	Lay 60"x60' CMP culvert		60	Feet	0.50	30.00	
	Back-fill on culvert		64	Cu.Yds.	0.10	6.40	
	Farm drive culvert at Sta 329 <del>/</del> 57						
	Remove 36"x18' RCP culvert		18	Feet	0.30	5.40	
Main	Total cost of Main						\$20573.66



Line	Item	Exhibit	Amount	Unit	Estimated Cost Unit	Total
Lat #1	Ditch construction Sta 0-50 to 61-74					
	Excavation	II	20373	Cu.Yds.	\$0.17	\$3463.41
	Spoil bank leveling	II	13582	"	0.03	407.46
	Clearing & grubbing trees and stumps	III	123	Units		148.10
	Clearing brush	III	34525	Sq.Ft.	0.25/100 s.f.	86.31
	Fence removal	IV	130	Rods	0.20	26.00
	Private road culvert at Sta 0-14					
	Remove 12"x16' CMP culv.		16	Feet	0.10	1.60
	Remove 10"x16' CMP "		16	"	0.10	1.60
	Furnish 12"x16', #16 guage, 10.5 lbs/ft. CMP culvert		16	"	1.84	29.44
	Furnish 12"x1' connecting band for above		1	"	1.84	1.84
	Lay 12"x32' CMP culvert		32	"	0.20	6.40
	Back-fill on culvert		5	Cu.yds	0.10	0.50
	County Highway culvert at Sta 30-48					
	Remove 36"x20' CMP culv.		20	Feet	0.20	4.00
	Remove 36"x20' RCP culv.		20	"	0.30	6.00
	Furnish 36"x34' RCP culv.		34	"	7.21	231.14
	Lay 36"x54' RCP culv.		54	"	0.40	21.60
	Back-fill on culvert		40	Cu.Yds.	0.10	4.00
	Farm crossing at Sta 38-87					
	Remove plank crossing bridge					2.00
Lat #1						<u>Total cost</u> \$4441.40
Lat #1-a	Ditch construction on Sta 0-00 to 22-82					
	Excavation	II	8949	Cu.yds.	0.17	\$1521.33
	Spoil bank leveling	II	5966	"	0.03	178.98
	Clearing & grubbing trees & stumps	III	29	Units		72.45
	Clearing brush	III	25860	Sq.Ft.	0.25/100 s.f.	64.65
	Fence removal	IV	27	Rods	0.20	5.40
	Farm crossing at Sta 6-35					
	Remove farm crossing culvert					1.00
Lat #1-a						<u>Total cost</u> \$1843.81
Lat #1-b	Ditch construction Sta 0-00 to 20-74					
	Excavation	II	7741	Cu.yds.	0.17	\$1315.97
	Spoil bank leveling	II	5160	"	0.03	154.80
	Clearing & grubbing trees and stumps	III	115	Units		146.00
	Clearing brush	III	54585	Sq.ft.	0.25/100 s.f.	136.46
	Fence removal	IV	50	Rods	0.20	10.00

Line	Item	Exhibit	Amount	Unit	Estimated Cost	
					Unit	Total
Lat #1-b	County Highway Culvert at Sta 7/95					
(cont'd.)	Furnish 30"x56', #14 gauge, 31 lbs/ft. CMP culvert		56	Feet	\$5.45	\$ 305.20
	Furnish 30"x2' connecting band for above		1	Unit	16.36	16.36
	Lay 30"x56' CMP culvert		56	Feet	0.30	16.80
	Back-fill on culvert		12	Cu.yds.	0.10	1.20
Lat #1-b			Total cost			\$2102.79

SUMMATION OF ESTIMATED COST FOR ALL LINES  
By Types of Work - length - 6.55 miles

Excavation	II	125842	Cu.yds.	0.17	\$21393.14
Spoils bank leveling	II	83894	"	0.03	2516.82
Clearing & grubbing trees and stumps	III	577	Units		1108.50
Clearing brush	III	138270	Sq.ft.	0.25	345.67
Fence removal	IV	731	Rods	0.20	146.20
Bridge construction	V				3451.33
					\$ 28961.66

SUMMATION OF ESTIMATED COST BY LINES

Main	\$ 20573.66
Lat #1	4441.40
Lat #1-a	1843.81
Lat #1-b	2102.79
All lines	\$ 28961.66

FINANCIAL REQUIREMENT FOR ANOKA DITCH #27 IMPROVEMENT

Construction cost as listed above	\$ 28961.66
Expenses of Attorney, Auditor, County Board, Viewers, Notices, etc.	1000.00
Engineer's bond	50.00
Extra help with surveys	150.00
Stakes	35.00
Anoka County Ditch #27-Total estimated cost -	\$ 30,196.66