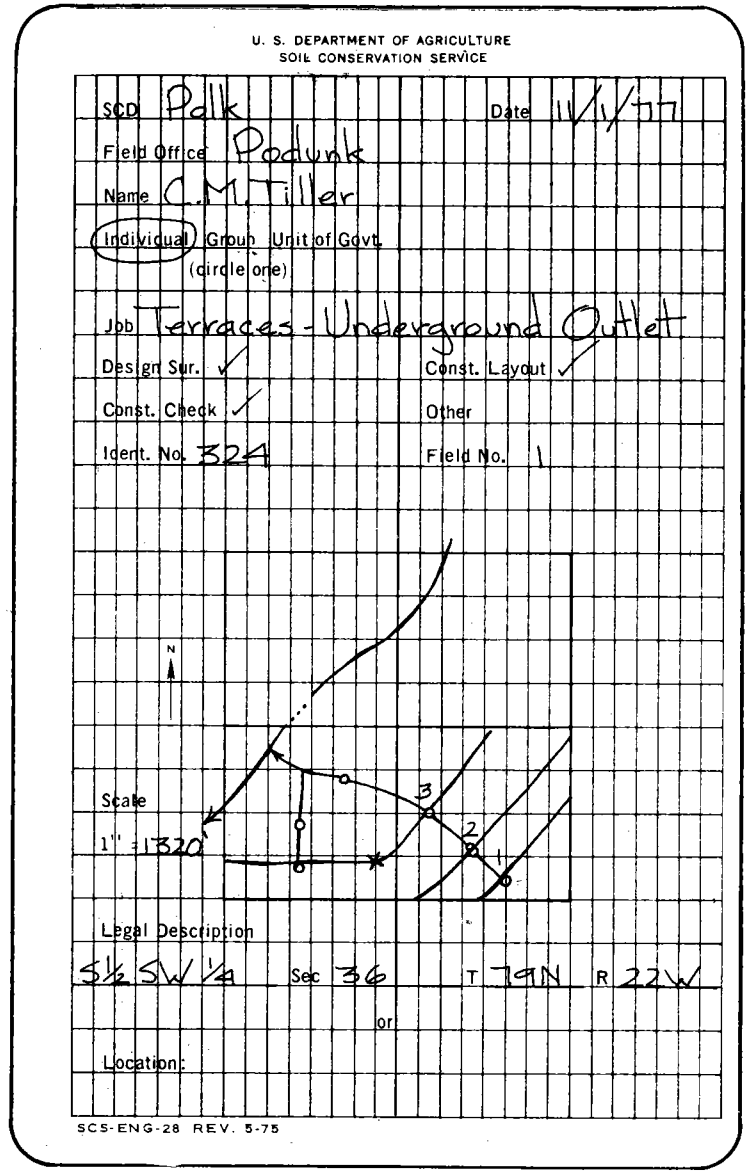
Figure 2-4 Sheet 1 of 3

FIGURE 2-4

Engineering Notes for Terraces

The layout notes illustrated here are considered appropriate for parallel terraces with underground outlet.

Terrace notes should be adequate to portray layout and checking in sufficient detail to insure proper functioning of the terrace.



Terrace No. 1

Sta.	B.S. Rod	H.I. Ridge Rod	F.S. or Grade Rod Channel Rod	Elev. or Planned Elev. Cut	Fill
0+00	6.0	5.3			0.7
1+00	6.4	5.7			0.7
2+00	7.0	6.3			0.7
+50	8.3	7.4			0.9
3+00	8.9				1.5
+50	9.1				1.7
4+00	9.3		9.3	0.0	1.9
+50	8.9		9.4	0.5	1.5
5+00	8.5		9.5	1.0	1.1
+50	9.4		9.6	0.2	2.0
6+00	9.2		9.7	0.5	1.8
+50	7.7		9.8	2.1	0.3
7+00	8.0		9.9	1.9	0.6
+50	10.0		10.0	0.0	2.6
8+00	10.2	7.4		0.0	2.8
+50	7.6	6.9		0.0	0.7
9+00	6.3	5.8		0.2	0.5
9+50	6.5	5.6		0.0	0.9

Sum = 115.1

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C.M. Tiller
Terraces

1

Design + Const. Layout

P. Roe
L. Cant
11/1/77

Water Storage ft³

Field Slope 4%
Horizontal Spacing 188 ft.
Storage Interval 2+50 to 8+50
Intake @ 8+00

16
38
47
57
45
36
66
59
31
35
101
116
0
647

Sum Rod Readings = 115.1

Avg. Rod = $\frac{115.1}{13}$ = 8.9

Try 8.9 - 1.5 = 7.4

Segments = $\frac{950}{50}$ = 19

Avail. Storage = $\frac{647}{19}$ = 34.4 ft³/ft.

Required Storage = $188\left(\frac{2}{12}\right)$ = 31.3 ft³/ft.

Trial OK.

Use Ridge Rod 7.4

Figure 2-4 Sheet 2 of 3

Figure 2-4 Sheet 3 of 3

Terrace No 1

Sta.	B.S.	H.I.	F.S. or Grade Rod	Elev. or Planned Elev.
	Chan Rod	Ridge Rod		
0	4.7	3.8		
1	5.7	4.2		
2	6.0	4.7		
3	7.4	5.8		
4	7.9	5.9	Low Point - OK	
5	8.1	5.8		
6	8.2	5.7		
7	8.5	5.6		
8	8.7	5.7		
9	3.6	4.4		

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C.M. Tiller | T J. Jones 2

Terraces | Ø C. Tiller

Const. Check | 12/3/77

$\frac{5.5}{50}$ $\frac{6.7}{20}$ $\frac{7.1}{10}$ $\frac{8.1}{0}$ $\frac{5.8}{15}$ $\frac{7.5}{24}$

Outlet - Top 6.1, Gnd. 8.8

Total length completed 4030 lin ft.
Steep Backslope seeded 45,600 ft²
Practice meets specifications

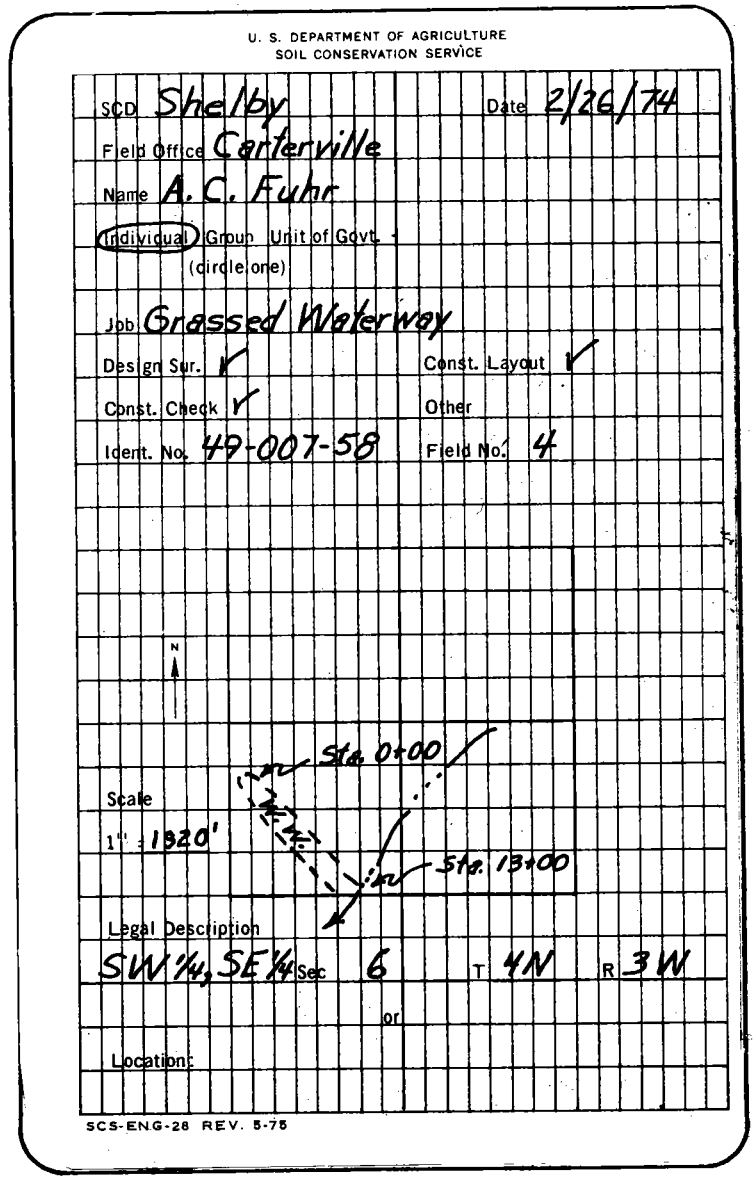
J Jones Eng. Tech.
12/3/77

FIGURE 2-5

Engineering Notes for Grassed Waterway

The format and content of this set of notes are suitable only for simple waterways where vertical controls and slope stakes are not necessary.

For the more complex types of waterways involving considerable cut and fill and requiring vertical control and slope stakes the general format illustrated in Figure 2-7 should be followed.


U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SCD Shelby Date 2/26/74
Field Office Carterville
Name A. C. Fuhr
Individual Group Unit of Govt.
(circle one)
Job Grassed Waterway
Design Sur. ✓ Const. Layout ✓
Const. Check ✓ Other
Ident. No. 49-007-58 Field No. 4

Scale
1" = 1320'

Legal Description
SW¼, SE¼ Sec 6 T 4N R 3W
or
Location:

SCS-ENG-28 REV. 5-75

Figure 2-5 Sheet 1 of 3

Figure 2-5 Sheet 2 of 3

~~Sta.~~	~~B.S.~~	~~H.I.~~	~~F.S. or Grade Rod~~	~~Elev. or Planned Elev.~~

Design Data

Drainage Area

Sta. 8+00 = 20 ac.

Sta. 13+00 = 40 ac.

Runoff

Q = 33 c.f.s. at Sta. 8+00

= 56 c.f.s. at Sta. 13+00

V = 4'/Sec. Grade = 3.0%

Dimensions

Sta. 0+00 to 8+00

Top width 22.0' Depth 1.3'

Sta. 8+00 to 13+00

Top width 32.0' Depth 1.3'

(Runoff & dimensions taken from tables)

Sta. 13+00 is intersection of ℄ of waterway & ℄ main draw.

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A.C. Fuhr. Grassed Waterway Design & Const. Layout | T J. Rowe 1 | Ø A.C. Fuhr 2/26/74

Typical existing x-sections (all rod readings with hand level)

Hub.							Hub.
5.0	5.3	5.5	7.5	7.2	5.6	4.9	4.7
0	10	15	16	18	20	35	50

Sta. 3+00

This section used in computing cut & fill in upper 800'

Hub.							
5.6	5.8	5.9	8.6	8.5	6.0	5.6	5.4
0	10	18	20	24	25	35	50

Sta. 10+50

This section used in computing cut & fill in lower 500'

Outside edges of waterway staked at 100' intervals. Increases from 22' W. to 32' W. between stations 7+50 & 10+50.

~~Sta.~~	~~B.S.~~	~~H.I.~~	~~F.S. or Grade Rod~~	~~Elev. or Planned Elev.~~	

Chained Length 1300'
Min. Width
Sta. 6+00 = 23'
Sta. 11+20 = 32'
Area
Av. width upper 800' = 24'
" " lower 500' = 33'
(800' x 24') + (500' x 33') = 35,700 □'
= 0.82 ac.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—0-200-611

A.C. Fuhr
Veg. Waterways
Const. Check

π J. Roe
φ R. Doe

2

3/5/74

Typical constructed X-sections
(hand level)

H								H
5.2	5.2	6.0	6.5	6.7	6.5	5.2	5.0	4.9
0	6	12	15	17	20	29	35	50

Sta. 3+00

H								H
5.0	5.0	5.6	6.3	6.5	6.3	5.8	5.0	4.8
0	6	12	18	22	25	30	38	50

Sta. 10+50

Construction meets plans and specifications. Waterway seeded on this date.

J. Roe
Cons. Tech.
3/5/74

Figure 2-5 Sheet 3 of 3

FIGURE 2-6

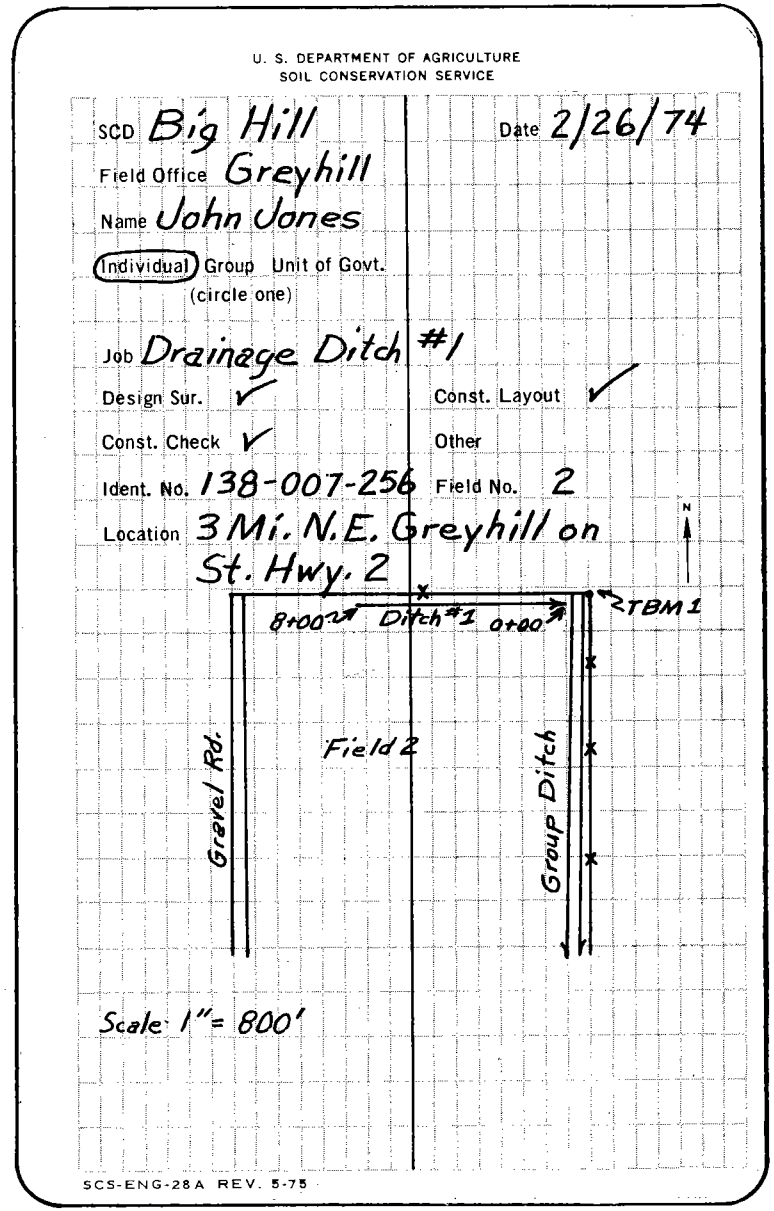
Engineering Notes for Small Drainage Ditch

These notes are for a small ditch that is to be cut with a motor patrol.

It was determined by taking a few random shots that a ditch with bottom elevation at outlet end one foot above bottom of the group ditch, and having a 0.05% bottom grade would give the desired drainage. With this information the planned bottom elevation and grade rod at each station were calculated.

Spoil is to be spread uniformly along each side of ditch during construction. For that reason, reference hubs showing cut from top of hub were offset 50' so they would not be disturbed during construction.

The topography was reasonably uniform, therefore, slope stakes were set at 200-foot intervals. Line stakes were set on the ℄ at 100-foot intervals.



Sta.	B.S.	H.I.	F.S. or Grade Rod	Elev. or Planned Elev.
BM1	4.22	45.22		41.00
Side Shot			9.0	36.2
0+00			+8.0	37.2
2+00			+7.9	37.3
4+00			+7.8	37.4
6+00			+7.7	37.5
8+00			+7.6	37.6
TP1	3.94	44.34	4.82	40.40
BM1			3.34	41.00
	8.16	OK.	8.16	

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J. Jones Ditch #1 | T. Edwards 1

Design + Const. Layout Ø R. Ray 2/26/74

"V" Ditch - 4:1 S.S.

60d nail near ground in W. side 16" cottonwood in NE corner fence.

Bottom of outlet ditch.

Ø	Right Hubs
C=2.4	C=3.0
5.6	5.0
0.0	50.0
C=2.5	C=3.0
5.4	4.9
0.0	50.0
C=2.9	C=3.2
4.9	4.6
0.0	50.0
C=3.0	C=3.4
4.7	4.3
0.0	50.0
C=1.9	C=2.9
5.7	4.7
0.0	50.0

Note: Cut to be measured from top of hub.

Figure 2-6 Sheet 2 of 3

Figure 2-6 Sheet 3 of 3

Sta.	B.S.	H.I.	F.S. or Grade Rod	Elev. or Planned Elev.	
BM1	4.00	45.00		41.00	
0+00			+7.8	37.2	
2+00			+7.7	37.3	
4+00			+7.6	37.4	
6+00			+7.5	37.5	
8+00			+7.4	37.6	
BM1			4.00	41.00	OK.

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J. Jones
Dr. Ditch #1
Const. Check

K J. Ryals
Ø J. Jones

2
3/5/74

Left ← Right

See page 1

7.9

Spoil | Spoil

5.2/56	4.7/44	4.7/16	5.3/12	7.9	5.4/10	4.8/16	4.7/43	5.2/45

7.8

4.9/45	4.4/43	4.3/16	4.6/12	7.7	4.7/12	4.1/16	4.2/44	4.5/46

7.6

Construction meets plans and specifications.

J. Ryals
Engr. Tech.
3/5/74

FIGURE 2-7

Engineering Notes for Surface Drainage (Group Ditch)

Design Survey

These notes are for a proposed group ditch involving enlargement and extension of an existing ditch. However, the general format is applicable to all open ditches.

A series of temporary bench marks was set prior to the design survey.

In the design survey, sufficient cross sections were taken of the old ditch to determine how much of it was adequate and the volume of excavation required to enlarge other parts.

The center of the old ditch was used as centerline for taking cross sections. This may not be practicable where there is water in the old ditch. In such cases, it may be better to establish a base line along one side of the ditch and extend the cross sections from it.

The uniformity of the topography made it feasible to use an interval of 200 feet between profile shots and an average interval of 400 feet between cross sections. Each job will have its own conditions for spacing of profile shots and frequency of cross sections.

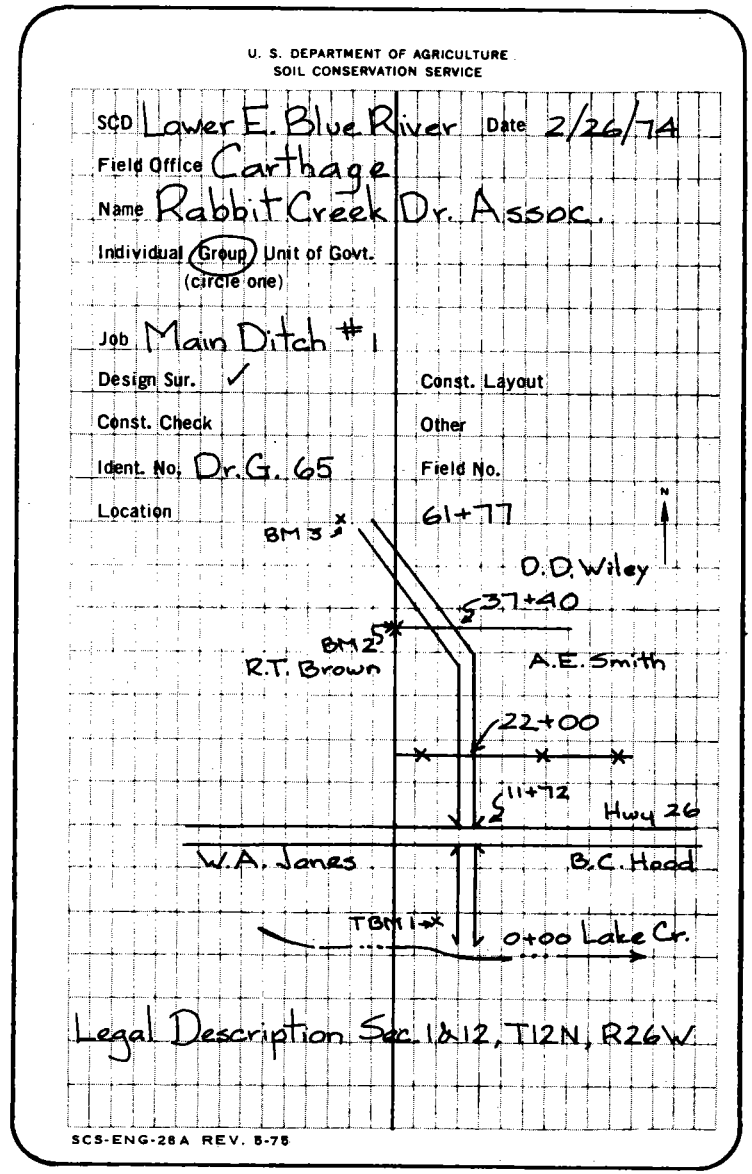

Figure 2-7 Sheet 1 of 17

Figure 2-7 Sheet 2 of 17

Sta.	B.S.	H.I.	F.S. or Grade Rod	Elev. or Planned Elev.
BM1	1.67	50.77		49.10
		(50.8)		
0+00				
1+00				
2+00				
3+00				
TP1	5.01	53.90	1.88	48.89
4+00				
6+00				
8+00				

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Rabbit Cr. Dr. Assoc. Main Ditch #1 Design Surv.

π R. Ryals
ø O. Brown 2/26/74

Left ℄ Right

20d nail in 8" pecan tree Δ 40' W. & 75' N. Sta. 0+00 Main Ditch #1

39.0
11.8 Outlet

39.2
11.6

39.3
11.5

(Natural drain from Sta. 0+00 to Sta. 3+00 is adequate in size and well stabilized with vegetation)

39.3
11.5

48.8	49.4	48.9	46.6	42.3	42.0	42.3	48.8	49.1	48.9
5.1	4.5	5.0	7.3	11.6	11.9	11.6	5.1	4.8	6.0
50	25	12	7	2		2	16	30	50

42.4
11.5

Low area in field

48.8	43.7	43.0	43.9	45.4	48.9	48.1
5.1	10.2	10.9	10.0	8.5	5.0	5.8
14	3		4	7	14	550

Sta.	B.S.	H.I.	F.S. or Grade Rod	Elev. or Planned Elev.	
		53.90			
TP2	4.61	54.23	4.28	49.62	
		(54.2)			
10+00					
11+36	Outlet end	6'x6' R.C. Box Culvert			
11+42					
11+54					
11+66					
11+72	Upper end culvert				
12+00					
14+00					
16+00					

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Rabbit Cr. Dr. Assoc.
Main Ditch #1
Design Surv.

2

Left			℄		Right
			44.7 9.5		
			44.2 10.0		Invert
			51.8 2.4		Road Shoulder
			52.4 1.8		℄ Hwy. #26
			52.0 2.2		Road Shoulder
			44.3 9.9		Invert
	49.6 4.6 17	48.9 5.3 8	46.6 7.6	47.5 6.7 4	48.8 5.4 10	49.6 4.6 16
			46.7 7.5		
	49.6 4.6 20	49.2 5.0 11	47.2 7.0	49.2 5.0 11	49.6 4.6 20

Figure 2-7 Sheet 3 of 17