BDET
BENGTSON DeBELL ELKIN & TITUS, LTD.
ENGINEERS SURVEYORS PLANNERS & LANDSCAPE-ARCHITECTS
P.O. BOX 429
5900 CENTREVILLE ROAD
CENTREVILLE
VA 22020
PH. (703) 631-9630
PH. (703) 369-5700
FAX (703) 631-6041

February 2, 1990

Mr. Irv Slike
County of Loudoun
Department of Engineering
741 Miller Drive, S.E.
Leesburg, Virginia 22075

RE: Loudoun Landfill Site "L"

Dear Mr. Slike:

Bengtson, DeBell, Elkin & Titus, Ltd. has completed the authorized subsurface investigation for the above referenced site.

A total of twelve (12) test borings were performed between December 19, 1989 and January 22, 1990. We have attached a summary and sketch of the boring locations. A complete record of the information obtained from each boring is indicated on the test boring log sheets attached.

A total of four (4) borings were conducted at the proposed location of boring VDOT #1. The initial boring VDOT #1A met auger refusal on shallow boulders. Therefore, three additional borings were offset in order to avoid the boulders and investigate the full depth of overburden. Unfortunately the offset borings also encountered boulders and were only capable of investigating up to 22.7 feet of overburden soil.

Two wells were set; one at boring VDOT #2A, the other at boring VDOT #4. Boring VDOT #2A was augered to refusal and the well screen was placed in the overburden in order to obtain periodic overburden perched groundwater readings. Well construction consisted of a well screen (.020 in.) set at tip elevation 244.76 and sand was packed to EL. 266.76. From EL. 266.76 to EL. 269.76 a bentonite seal was provided. Water readings were taken during the development of the well through February 1, 1990 as per the instructions of Loudoun County. This information is attached.

The well screen in boring VDOT #4 was placed in rock in order to obtain periodic readings of groundwater within competent rock layers. Well construction consisted of a well screen (.020 in.) set at tip elevation 231.63 and sand was packed to EL. 249.23.

From EL. 249.23 to 254.63 a bentonite seal was provided in order to prevent the introduction of perched overburden groundwater into the well. Water readings were taken during the development of the well through February 1, 1990 as per the instructions of Loudoun County. This information is attached.

We appreciate the opportunity to provide you with these services. Should you have any questions regarding this letter, please do not hesitate to contact me.

Sincerely,

Timothy M. Joness
Geotechnical Engineer

Emad E. Saadeh, P.E.
Geotechnical Engineering Department Head

Attachment

TMJ/EES/ls

LOUDOUN LANDFILL SITE "L"

GROUNDWATER MONTIORING DATA

VDOT #2A WELL
(Existing ground surface at EL. 334.76)

DATE		WATER LEVEL (BELOW EXISTING GROUND SURFACE
01/12/90	At well completion	8.8'
01/18/90		8.5'
01/25/90		8.5'
02/01/90		7.4'

VDOT #4 WELL
(Existing groundsurface at EL. 354.63)

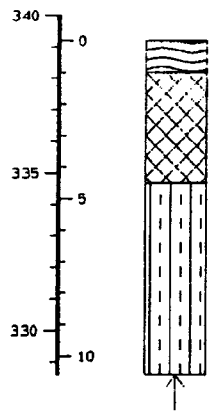
01/20/90	At well completion	46.1'
01/25/90		46.1'
02/01/90		44.9'

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #1A

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #1A
ELEVATION: 339.19'
BORING LOCATION: RTE. 621
DRILLER: M. VANDERMARK
DATE DRILLED: 12/29/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: 8.5' 24 HRS: N/A



ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT
		OL	TOPSOIL: Dark brown, silty, very moist			
		ML/GM	FILL: Silt, dark brown, w/fine sand & gravel (cobbles & boulders) very moist			
		ML/GM	SILT: Red-brown, some fine sand, w/cobbles & boulders, very wet at 8.5'	Auger refusal on boulders		

Auger refusal at 10.6'.

Figure Number 1

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #1A

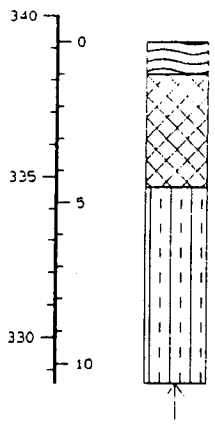
PROJECT NAME: LOUDOUN LANDFILL SITE "L" — PROJECT NO.: CT08963000

BORING NO.: VDOT #1A — ELEVATION: 339.19'

BORING LOCATION: RTE. 621

DRILLER: M. VANDERMARK — DATE DRILLED: 12/29/89

WATER DEPTH: ENCOUNTERED: NONE — COMPLETION: 8.5' — 24 HRS: N/A



ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT
		OL	TOPSOIL. Dark brown, silty, very moist			
		ML/GM	FILL: Silt, dark brown, w/fine sand & gravel (cobbles & boulders) very moist			
		ML/GM	SILT: Red-brown, some fine sand, w/cobbles & boulders, very wet at 8.5'			
				Auger refusal on boulders		

Auger refusal at 10.6'

Figure Number 1

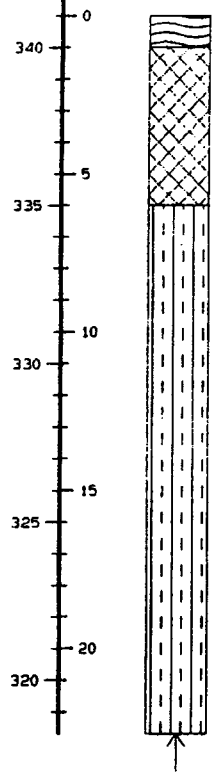
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #1C

PROJECT NAME: LOUDOUN LANDFILL SITE "L" PROJECT NO.: CT08963000
BORING NO.: VDOT #1C ELEVATION: 341.01'
BORING LOCATION: OFFSET 10' NORTH OF #1B, RTE.621
DRILLER: M. VANDERMARK DATE DRILLED: 12/29/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: 9.1' 24 HRS: N/A



ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
		OL	TOPSOIL: Dark brown, silty, very moist, soft			
		ML	FILL: Silt, dark brown, with fine sand & gravel, moist			
		ML/ GM	SILT: Dark red-brown, sandy, some cobbles & boulders, moist - very moist at 9.0'			
				Difficult to auger from 21.5-22.7'		
				Auger refusal on boulders		

Auger refusal at 22.7'

Figure Number 3

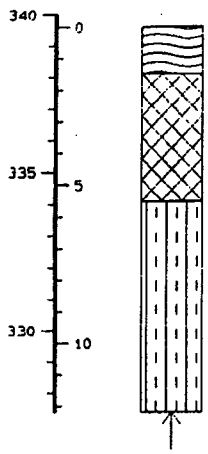
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #1B

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #1B
ELEVATION: 339.60'
BORING LOCATION: OFFSET 15' NORTH OF #1A, RTE.621
DRILLER: M. VANDERMARK
DATE DRILLED: 12/29/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: 8.7' 24 HRS: N/A



ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
		OL	TOPSOIL: Dark brown, silty, very moist, soft			
		ML/ GM	FILL: Silt, dark brown, sandy with cobbles & boulders			
		ML/ GM	SILT: Dark red-brown, sandy, some gravel (cobbles), very moist - wet at 9.0'	Auger refusal on boulders		

Auger refusal at 12.2'

Figure Number 2

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #2

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #2
ELEVATION: 334.76'
BORING LOCATION: RTE.621
DRILLER: M. VANDERMARK
DATE DRILLED: 01/03/90

WATER DEPTH: ENCOUNTERED: 10.0' COMPLETION: 9.1' 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
340						
0		OL	TOPSOIL: Dark brown, silty, very moist, soft			
330		ML	FILL: Silt, reddish-brown to gray, fine sandy silt, very moist, soft to medium stiff			
10		ML	SILT: Tan to brown, some sand, trace gravel, very moist to wet, stiff, occasional cobbles	Water at 10' during drilling		
320						
20						
310						
30						
300						
40						
290						
50						
280	Boring Continues					

Auger refusal at 90.1'

Figure Number 5

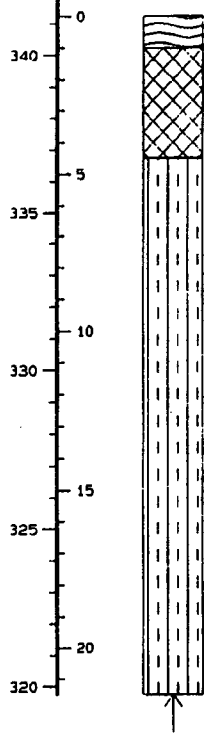
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #1D

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #1D
ELEVATION: 341.24'
BORING LOCATION: OFFSET 20' NORTH OF #1D, RTE.621
DRILLER: M. VANDERMARK
DATE DRILLED: 12/29/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: 9.0' 24 HRS: N/A



USCS	Description	Remarks	"N" (BPF)	RECOV FT.
OL	TOPSOIL: Dark brown, silty, very moist, soft			
ML	FILL: Silt, dark brown, sandy with gravel, moist			
ML	SILT: Red-brown, some fine sand and gravel, cobbles and boulders from 12.0-21.5', wet at 9.0'			
		Difficult to auger from 19.8-21.5'		
		Auger refusal on boulders		

Auger refusal at 21.5'

Figure Number 4

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #3

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #3
ELEVATION: 332.31'
BORING LOCATION: RTE.621
DRILLER: M. VANDERMARK
DATE DRILLED: 01/04/90

WATER DEPTH: ENCOUNTERED: 16.0' COMPLETION: 39.0' 48 HRS: 21.5'

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT
340						
0 / 330		OL	TOPSOIL: Brown, silty with little fine sand, very moist to wet, soft			
		ML	FILL: Silt, tan-brown with little fine sand, trace cobbles & broken rock frags, moist, medium stiff			
10 / 320		ML	SILT: Tan-brown, little fine sand, trace cobbles, very moist to wet, medium stiff to very stiff			
				Water encountered at 16.0'		
20 / 310						
30 / 300						
40 / 290						
50 / 280	Boring Continues					

Auger refusal at 169.2'

Figure Number 7

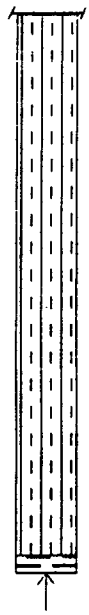
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #2

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #2
ELEVATION: 334.76'
BORING LOCATION: RTE.621
DRILLER: M. VANDERMARK
DATE DRILLED: 01/03/90

WATER DEPTH: ENCOUNTERED: 10.0' COMPLETION: 9.1' 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
280						
60				"ML" STRATUM continues		
270						
70						
260						
80						
250						
90			MODERATELY WEATHERED ROCK: Possible boulders			

Auger refusal at 90.1'

Figure Number 6

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #3

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #3
ELEVATION: 332.31'
BORING LOCATION: RTE.621
DRILLER: M. VANDERMARK
DATE DRILLED: 01/04/90

WATER DEPTH: ENCOUNTERED: 16.0' COMPLETION: 39.0' 48 HRS: 21.5'

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
220				"ML" STRATUM continues		
120						
210						
130						
200						
140						
190						
150						
180						
160						
170						

Auger refusal at 169.2'

Figure Number 9

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #3

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
BORING NO.: VDOT #3
BORING LOCATION: RTE.621
DRILLER: M. VANDERMARK

PROJECT NO.: CT08963000
ELEVATION: 332.31'

DATE DRILLED: 01/04/90

WATER DEPTH: ENCOUNTERED: 16.0' COMPLETION: 39.0' 48 HRS: 21.5'

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOVERY
280				**"ML" STRATUM continues**		
60				Cobble content increases below 57.0'		
270						
70						
260						
80						
250						
90						
240			CORE STONE BOULDER			
		ML	SILT: tan-brown, little sand, trace cobbles, very moist to wet, medium stiff to very stiff.			
100						
230						
110						
220	Boring Continues					

Auger refusal at 169.2'

Figure Number 8

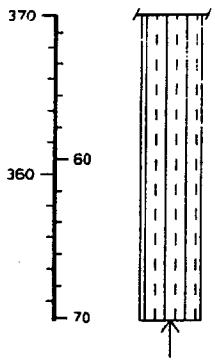
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #5

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #5
ELEVATION: 420.95'
BORING LOCATION: RTE.771
DRILLER: M. VANDERMARK
DATE DRILLED: 12/27/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: DRY 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
370				**"ML" STRATUM continues**		
360 — 60						
70						

Auger refusal at 70.2'

Figure Number 11

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #5

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT09963000
BORING NO.: VDOT #5
ELEVATION: 420.95'
BORING LOCATION: RTE.771
DRILLER: M. VANDERMARK
DATE DRILLED: 12/27/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: DRY 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
430						
420 (0)		OL	TOPSOIL: Brown, silty, moist, soft			
		ML	SILT: Reddish tan-brown, sandy, some gravel, occasional cobbles & boulders, moist, stiff			
410 (10)						
400 (20)						
390 (30)						
380 (40)		ML	SILT: Reddish tan-brown, sandy, some gravel, some boulders/cobbles moist, hard			
370 (50)	Boring Continues					

Auger refusal at 70.2'

Figure Number 10

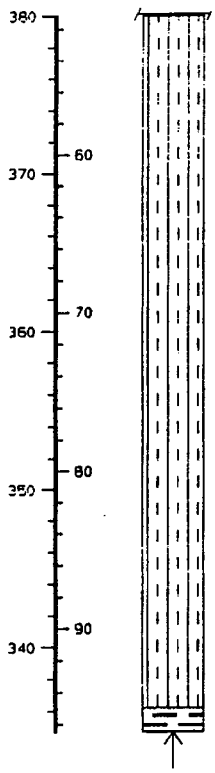
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #6

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #6
ELEVATION: 431.19'
BORING LOCATION: RTE.771
DRILLER: M. VANDERMARK
DATE DRILLED: 12/21/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: DRY 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
380				**"ML" STRATUM continues**		
370 (60)						
360 (70)						
350 (80)						
340 (90)			MODERATELY WEATHERED ROCK: possible pinnacle or quartz conglomerate boulder			

Auger refusal at 96.5'

Figure Number 13

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #6

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #6
ELEVATION: 431.19'
BORING LOCATION: RTE.771
DRILLER: M. VANDERMARK
DATE DRILLED: 12/21/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: DRY 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
440						
430 (0)		OL	TOPSOIL: Dark brown, silty, moist			
		ML	SILT: Reddish brown, some fine sand, trace fine gravel, moist, stiff to very stiff			
420 (10)						
410 (20)						
400 (30)						
390 (40)		ML	SILT: Dark brown, sandy, stringers of weathered rock 6"-10" thick, moist, v. stiff to hard			
380 (50)	Boring Continues					

Auger refusal at 96.5'

Figure Number 12

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #7

PROJECT NAME: LOUDOUN LANDFILL SITE "L" PROJECT NO.: CT08963000

BORING NO.: VDOT #7 ELEVATION: 411.89'

BORING LOCATION: OFFSET 260' TOWARDS VDOT #6, N. SHOULDER RTE 771

DRILLER: M. VANDERMARK DATE DRILLED: 12/28/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: DRY 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
350			QUARTZ CONGLOMERATE BOULDER			
60		ML	SILT: Reddish-brown, some fine sand, trace gravel, some cobbles moist, hard			
350			MODERATELY WEATHERED ROCK: Possible boulder			

Auger refusal at 62.7'

Figure Number 15

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #7

PROJECT NAME: LOUDOUN LANDFILL SITE "L" PROJECT NO.: CT08963000

BORING NO.: VDOT #7 ELEVATION: 411.89'

BORING LOCATION: OFFSET 260' TOWARDS VDOT #6, N SHOULDER RTE 771

DRILLER: M. VANDERMARK DATE DRILLED: 12/28/89

WATER DEPTH: ENCOUNTERED: NONE COMPLETION: DRY 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
420						
0 / 410		OL	TOPSOIL: Dark brown, silty, trace quartz, moist			
		ML	SILT: Tan brown, some fine sand, trace fine gravel & cobbles, moist stiff			
10 / 400						
		ML	SILT: Dark brown, some fine sand, trace fine gravel & cobbles, moist stiff			
20 / 390		ML	SILT: Reddish-brown, some fine sand, trace gravel & cobbles, moist, stiff			
30 / 380						
40 / 370		ML	SILT: Reddish-brown, some fine sand, trace gravel, some cobbles, moist, hard			
50 / 360	Boring Continues					

Auger refusal at 62.7'

Figure Number 14

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #8

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #8
ELEVATION: 318.21'
BORING LOCATION: RTE.771
DRILLER: T. CONNELLY
DATE DRILLED: 12/19/89

WATER DEPTH: ENCOUNTERED: 25.5' COMPLETION: 26.0' 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
260 / 60				**"ML/MH" STRATUM continues**		
250 / 70						
240 / 80						
230 / 90						
220 / 100						
210 / 110						
		ML/ CL	BOULDERS SILT: Clayey, with gravel, moist	Auger press. 112.0'- 119.7 800- 1200 psi		
200	Boring Continues					

Auger refusal at 119.7'

Figure Number 17

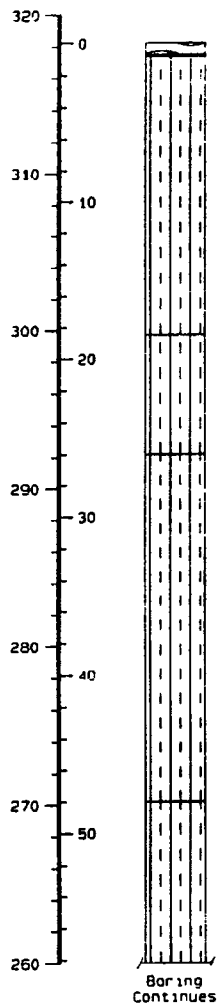
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #8

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #8
ELEVATION: 318.21'
BORING LOCATION: RTE.771
DRILLER: T. CONNELLY
DATE DRILLED: 12/19/89

WATER DEPTH: ENCOUNTERED: 25.5' COMPLETION: 26.0' 24 HRS: N/A



USCS	Description	Remarks	"N" (BPF)	RECOV FT.
OL	TOPSOIL: Brown, silty, some gravel, moist	Auger press. 0.0'- 48.0' 500 psi.		
ML	SILT: Red-brown, trace fine sand and clay, moist			
ML	SILT: Red-brown, some clay and fine sand, very moist			
ML	SILT: Strong brown, sandy, very moist to wet			
ML/ MH	SILT: Dark red, clayey, fine sand and gravel, occasional cobbles, wet	Auger press. 48.0'- 112.0' 500- 800 psi		

Auger refusal at 119.7'

Figure Number 16

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #2A

PROJECT NAME: LOUDOUN LANDFILL SITE "L" PROJECT NO.: CT08963000
BORING NO.: VDOT #2A ELEVATION: 334.76'
BORING LOCATION: OFFSET 1.0' WEST OF VDOT #2, RTE.621
DRILLER: M. VANDEMARK DATE DRILLED: 01/10/90

WATER DEPTH: ENCOUNTERED: COMPLETION: 15.5' 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
340						
0		OL	TOPSOIL	Wash boring to 90.0'		
		ML	FILL: Silt, reddish-brown to gray, sandy, very moist, soft to medium stiff			
330		ML	SILT: Brown, some sand, trace gravel, very moist to wet, medium stiff, occasional cobbles			
10						
320						
20						
310						
30						
300						
40						
290						
50						
280	Boring Continues					

Roller bit refusal at 90.0'

Figure Number 19

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #8

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
BORING NO.: VDOT #8
BORING LOCATION: RTE.771
DRILLER: T. CONNELLY

PROJECT NO.: CT08963000
ELEVATION: 318.21'
DATE DRILLED: 12/19/89

WATER DEPTH: ENCOUNTERED: 25.5' COMPLETION: 26.0' 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
200			MODERATELY WEATHERED ROCK: Very difficult to auger			

Auger refusal at 119.7'

Figure Number 18

Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #4

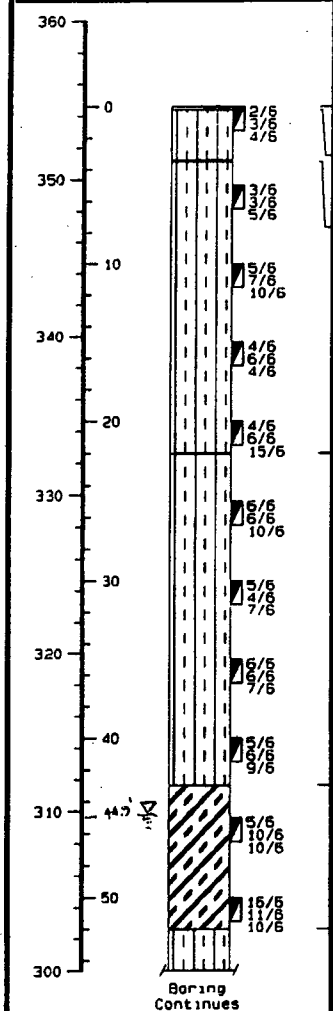
PROJECT NAME: LOUDOUN LANDFILL SITE "L" — PROJECT NO.: CT08963000

BORING NO.: VDOT #4 — ELEVATION: 354.63'

BORING LOCATION: RTE.621

DRILLER: M. VANDEMARK — DATE DRILLED: 01/12/90

WATER DEPTH: ENCOUNTERED: 72.5' COMPLETION: 46.1' 24 HRS: N/A



USCS	Description	Remarks	"N" (BPF)	RECOV FT.
OL	TOPSOIL: Dark brown, silty, little fine sand, some organics & roots	Auger to 103.1'	7	1.5
ML	SILT: Brown-red, little fine sand, trace gravel, trace roots, moist, medium stiff	Core from 103.1'- 125.4	8	1.5
ML	SILT: Reddish-brown, trace medium sand, trace gravel, moist, medium stiff to stiff		17	1.5
			10	1.5
			21	1.5
ML	SILT: Reddish-brown, little sand, occasional cobbles, moist, becomes saprolitic - relic structure		16	1.5
			11	1.5
			13	1.5
			15	1.5
CH	PLASTIC CLAY: Silty, light brown, moist, very stiff		20	0.0
			21	0.0
ML	SILT: Reddish-brown, fine sandy silt, trace mica w/some stains, moist, hard, residual			

Coring terminated at 125.4'

Figure Number 21

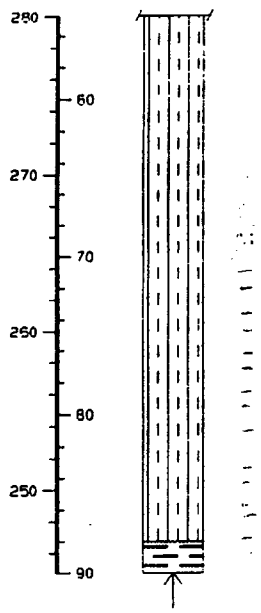
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #2A

PROJECT NAME: LOUDOUN LANDFILL SITE "L" PROJECT NO.: CT08963000
BORING NO.: VDOT #2A ELEVATION: 334.76'
BORING LOCATION: OFFSET 1.0' WEST OF VDOT #2, RTE.621
DRILLER: M. VANDEMARK DATE DRILLED: 01/10/90

WATER DEPTH: ENCOUNTERED: COMPLETION: 15.5' 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV. FT.
280				**"ML" STRATUM continues**		
60						
270						
70				Partial water loss at 70.0'- 80.0'		
260						
80				Well tip set at 90.0' - Screen set 70.0'- 90.0' - Sand packed 68.0'- 90.0' - Bentonite seal 65'- 68'		
250						
90			MODERATELY WEATHERED ROCK: roller bit refusal at 90'			

Roller bit refusal at 90.0'

Figure Number 20

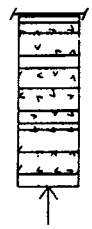
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #4

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #4
ELEVATION: 354.63'
BORING LOCATION: RTE.621
DRILLER: M. VANDEMARK
DATE DRILLED: 01/12/90

WATER DEPTH: ENCOUNTERED: 72.5' COMPLETION: 46.1' 24 HRS: N/A

ELEV / DEPTH	SOIL SYMBOLS SAMPLER SYMBOLS AND FIELD TEST DATA	USCS	Description	Remarks	"N" (BPF)	RECOV FT.
240			ROCK: Conglomerate, very hard, frac. spacing- mod. close frac. angle- moderate to low			
120			ROCK: Conglomerate, fresh, frac. spacing- close to wide frac. angle- moderate	119.9 -125.4' Recov.- 2.0' RQD- 26%		
230			ROCK: Conglomerate, severe weathered frac. spacing- extra close frac. angle- moderate			

Coring terminated at 125.4'

Figure Number 23

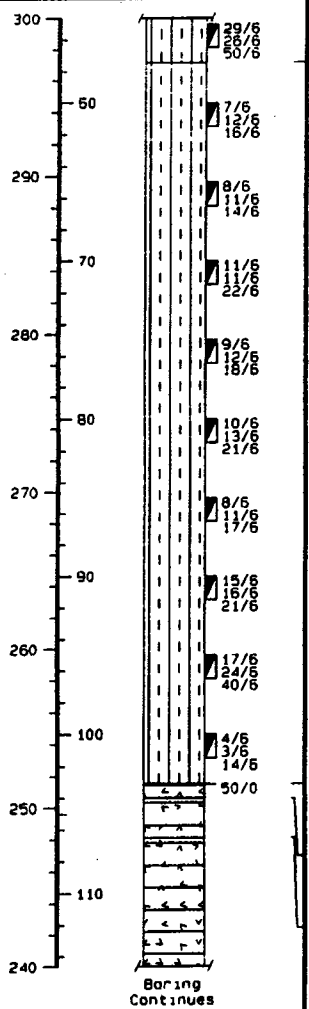
Bengtson DeBell Elkin Titus, Ltd.

LOUDOUN LANDFILL SITE "L"

BORING LOG VDOT #4

PROJECT NAME: LOUDOUN LANDFILL SITE "L"
PROJECT NO.: CT08963000
BORING NO.: VDOT #4
ELEVATION: 354.63'
BORING LOCATION: RTE.621
DRILLER: M. VANDEMARK
DATE DRILLED: 01/12/90

WATER DEPTH: ENCOUNTERED: 72.5' COMPLETION: 46.1' 24 HRS: N/A



USCS	Description	Remarks	"N" (BPF)	RECOV. FT.
ML	SILT: Grayish-brown, some fine sand, trace gravel, moist to wet, hard, conglomerate saprolite		76	1.5
			28	1.5
			25	1.5
			33	0.0
			30	1.5
		Well tip set at 123.0' - Screen from 105.4'- 123' - Sand packed 105.4 -125.4' - Bentonite seal from 100'- 105.4'	34	1.5
			28	1.5
			37	1.5
			64	1.5
			17	1.5
	ROCK: Conglomerate, v.hard frac. spacing- moderate frac. angle- moderate	103.1 -110.1' Recov.- 6.9' RQD- 51%	100+	0.0
	ROCK: Conglomerate, severe weathered frac. spacing- extra close frac. angle- moderate			
	ROCK: Conglomerate, fresh, hard frac. spacing- close to wide frac. angle- moderate	110.1 -119.9' Recov.- 9.5' RQD- 82%		
	Clay rich zones			

Coring terminated at 125.4'

Figure Number 22

Bengtson DeBell Elkin Titus, Ltd.

SITE 'L'

VDOT #5 ROUTE 771, 85' EAST OF MAILBOX NUMBER 324-C ON EASTBOUND SHOULDER, 9' FROM CENTERLINE ROAD.

VDOT #6 ROUTE 771, 67' WEST OF MAILBOX NUMBER 323-D, ON WESTBOUND SHOULDER, 8' FROM CENTERLINE ROAD.

VDOT #7 ROUTE 771, 25' EAST OF NOVEC TRANSFORMER 25 #429-5-4-12 IN DRIVEWAY ENTRACE TO LOT 3.

VDOT #8 ROUTE 771, ±1100' EAST OF NOVEC TRANSFORMER 25 #429-5-4-12 ON WESTBOUND SIDE, ACROSS DITCH, 5' FROM FENCE.

BDET
BENGTSON
DeBELL
ELKIN &
TITUS, LTD.

ENGINEERS
SURVEYORS
PLANNERS &
LANDSCAPE-
ARCHITECTS

P.O. BOX 429
5900 CENTREVILLE ROAD
CENTREVILLE
VA 22020

PH. (703) 631-9630
PH. (703) 369-5700
FAX (703) 631-6041

SITE 'L'

VDOT #1A ROUTE 621 (1ST ATTEMPT), 8' SOUTH NOVEC POLE NUMBER 114-25-95, WITHIN SOUTHBOUND LANE, 25' FROM CENTERLINE ROAD.

VDOT #1B ROUTE 621 (2ND ATTEMPT), 3' NORTH NOVEC POLE NUMBER 114-25-95, WITHIN SOUTHBOUND, 25' FROM CENTERLINE ROAD.

VDOT #1C ROUTE 621 (3RD ATTEMPT), 14'NORTH NOVEC POLE NUMBER 114-25-95, ON SOUTHBOUND SHOULDER, 18' FROM CENTERLINE ROAD.

VDOT #1D ROUTE 621 (4TH ATTEMPT), 30' NORTH NOVEC POLE #114-25-95, ON SOUTHBOUND SHOULDER, 17' FROM CENTERLINE ROAD.

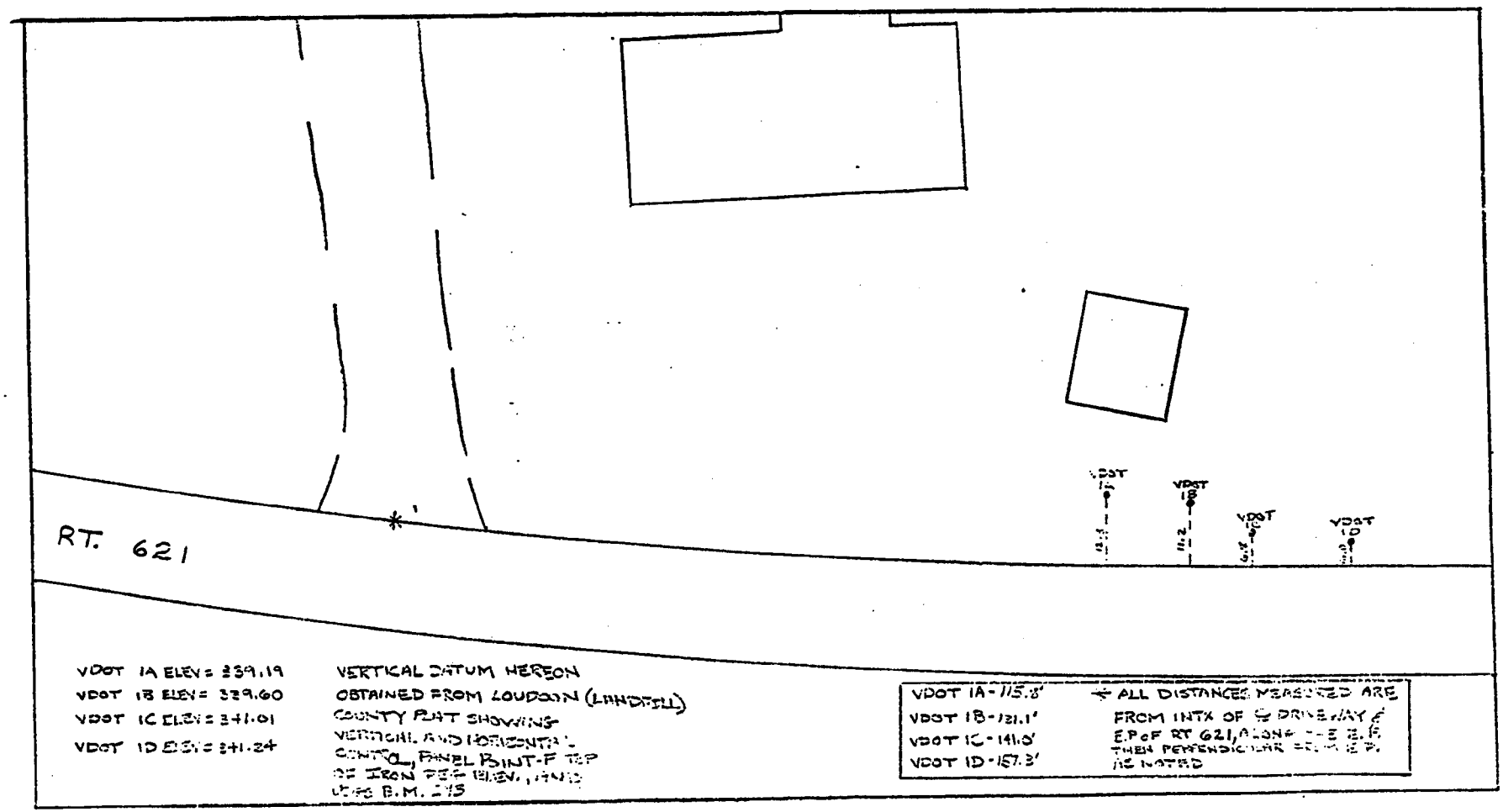
VDOT #2 ROUTE 621, 129' SOUTH POLE NUMBER 429-532, ON SOUTHBOUND SHOULDER, 18' FROM CENTERLINE ROAD.

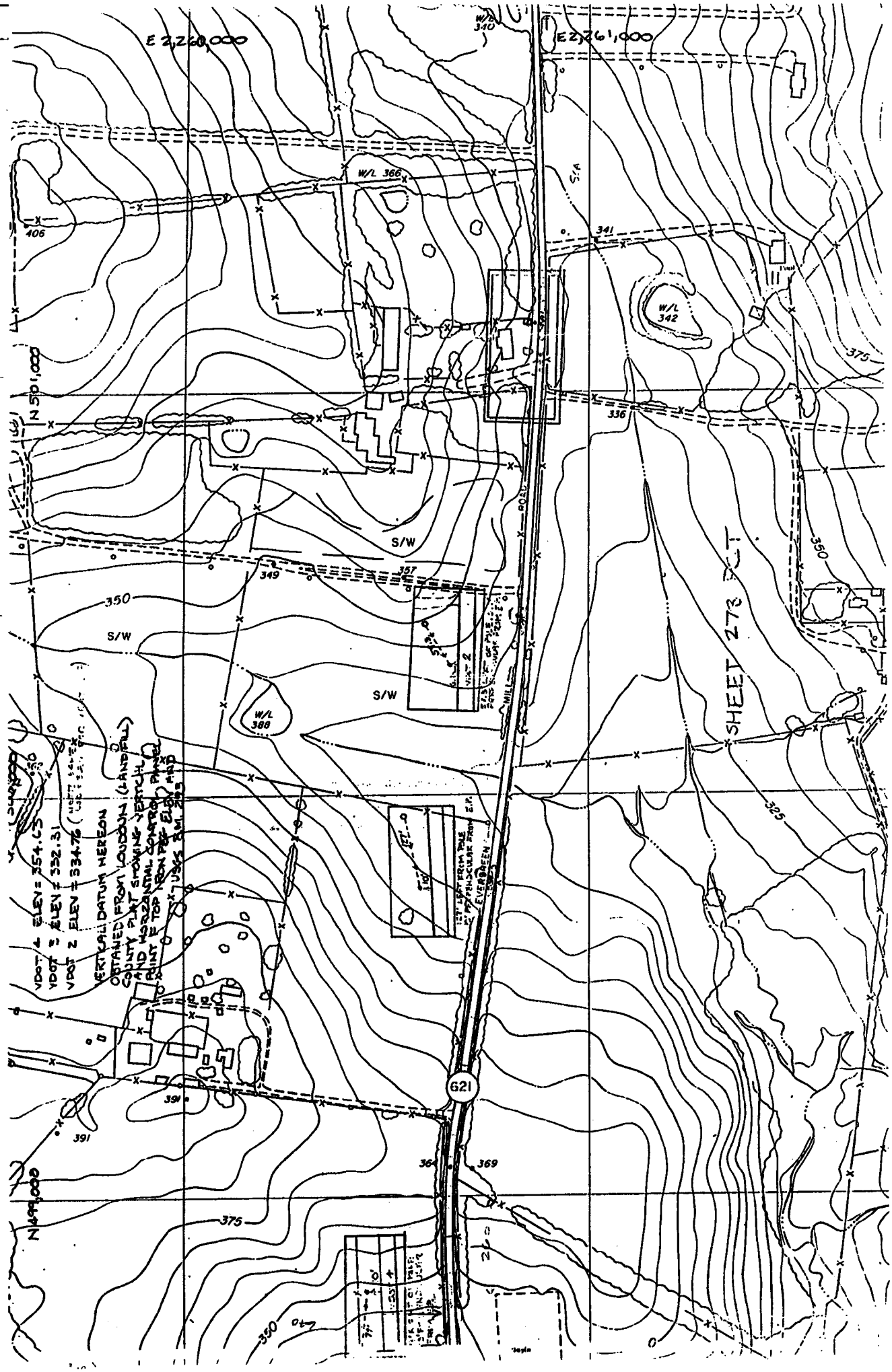
VDOT #2A ROUTE 621, 129' SOUTH POLE NUMBER 429-532, ON SOUTHBOUND SHOULDER, 19' FROM CENTERLINE ROAD.

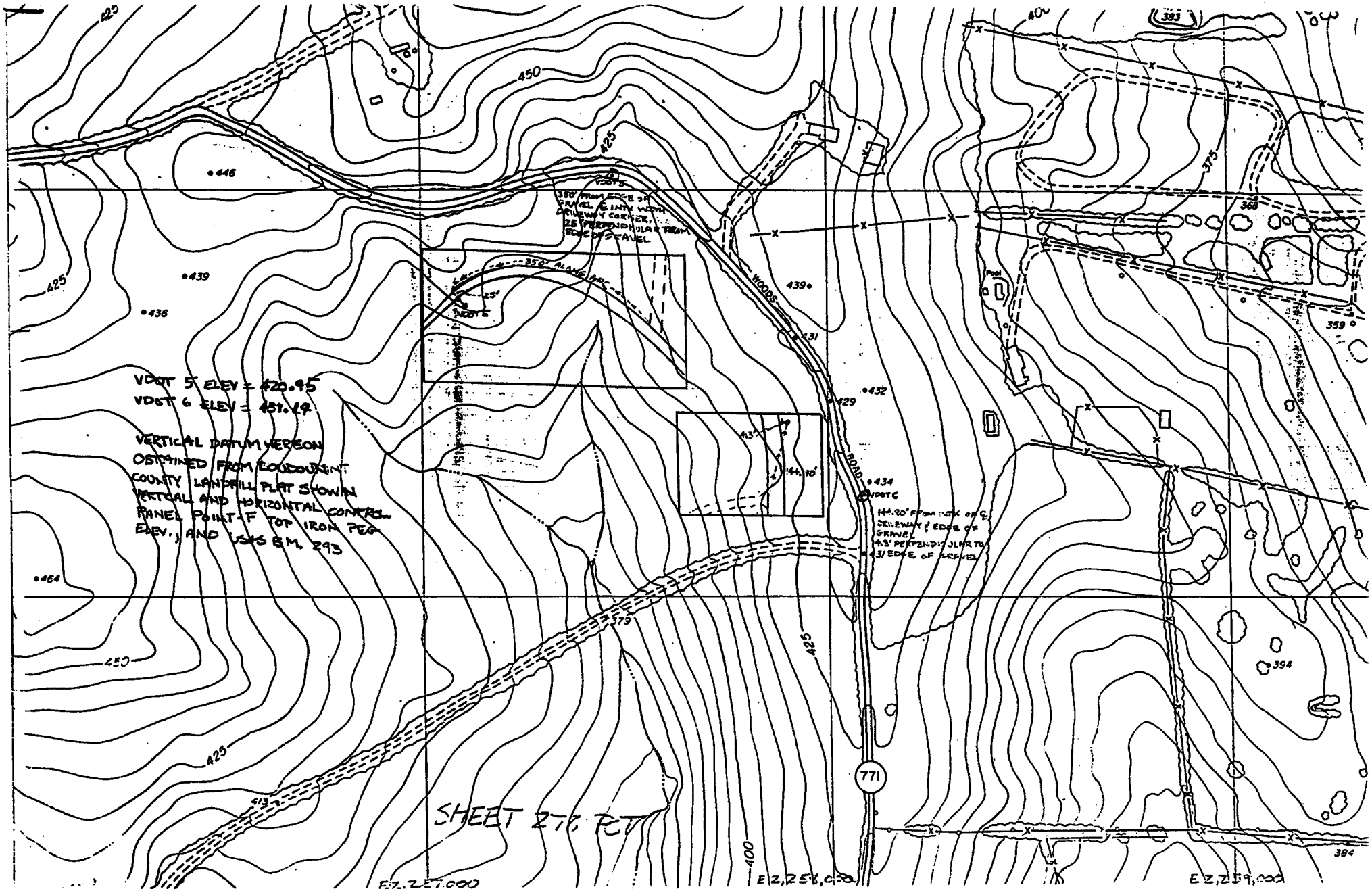
VDOT #3 ROUTE 621, 120' SOUTH POLE NUMBER 429-653, ON SOUTHBOUND SHOULDER, 15' FROM CENTERLINE ROAD.

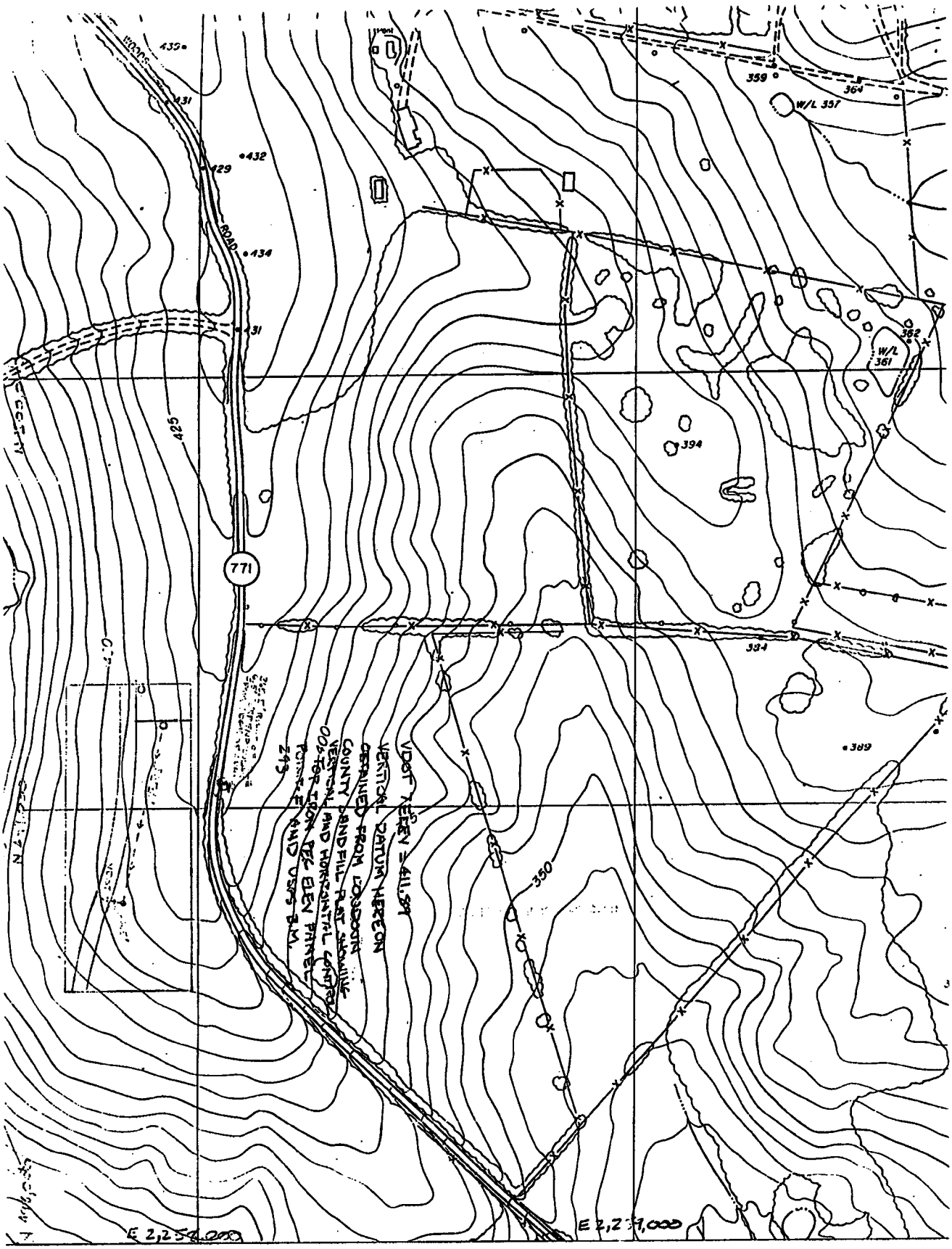
VDOT #4 ROUTE 621, 76' NORTH POLE NUMBER FH-37-115-183, ON SOUTHBOUND SHOULDER, 20' FROM CENTERLINE ROAD.

DETAIL FROM SHEET 278 PCT




E 2,260,000
E 2,261,000
N 501,000
N 499,000
W/L 340
W/L 366
W/L 342
W/L 388
406
341
336
375
350
349
357
325
391
364
369
S/W
621
SHEET 273 PCT
VDOT 4 ELEV = 354.63
VDOT 3 ELEV = 332.31
VDOT 2 ELEV = 334.76
VERTICAL DATUM HEREON
OBTAINED FROM LOUDOUN (LANDFILL)
COUNTY PLAT SHOWING VERTICAL
AND HORIZONTAL CONTROL PANEL
POINT F TOP IRON PEG ELEV AND
USGS B.M. 293
MILL
ROAD
EVERGREEN


VDOT 5 ELEV = 420.95
VDOT 6 ELEV = 431.19
VERTICAL DATUM HEREON
OBTAINED FROM LOUDOUN INT
COUNTY LANDFILL PLAT SHOWN
VERTICAL AND HORIZONTAL CONTROL
PANEL POINT-F TOP IRON PEG
ELEV., AND USGS B.M. 293
350' FROM EDGE OF GRAVEL & INTX WITH DRIVEWAY CORNER, 25' PERPENDICULAR FROM EDGE OF GRAVEL
350' ALONG ARC
25'
VDOT 5
VDOT 6
144.90' FROM INTX OF ℄ DRIVEWAY & EDGE OF GRAVEL
4.3' PERPENDICULAR TO EDGE OF GRAVEL
WOODS
ROAD
771
SHEET 27 PCT
E2,257,000
E2,258,000
E2,259,000
450
425
400
375
379
413
446
439
436
464
431
432
429
434
368
359
394
384
383



MATCH SHEET 279

REVISIONS

SHEET LOCATION

SHEET 278 PCT

SCALE 1:2,400

1 INCH : 200 FEET

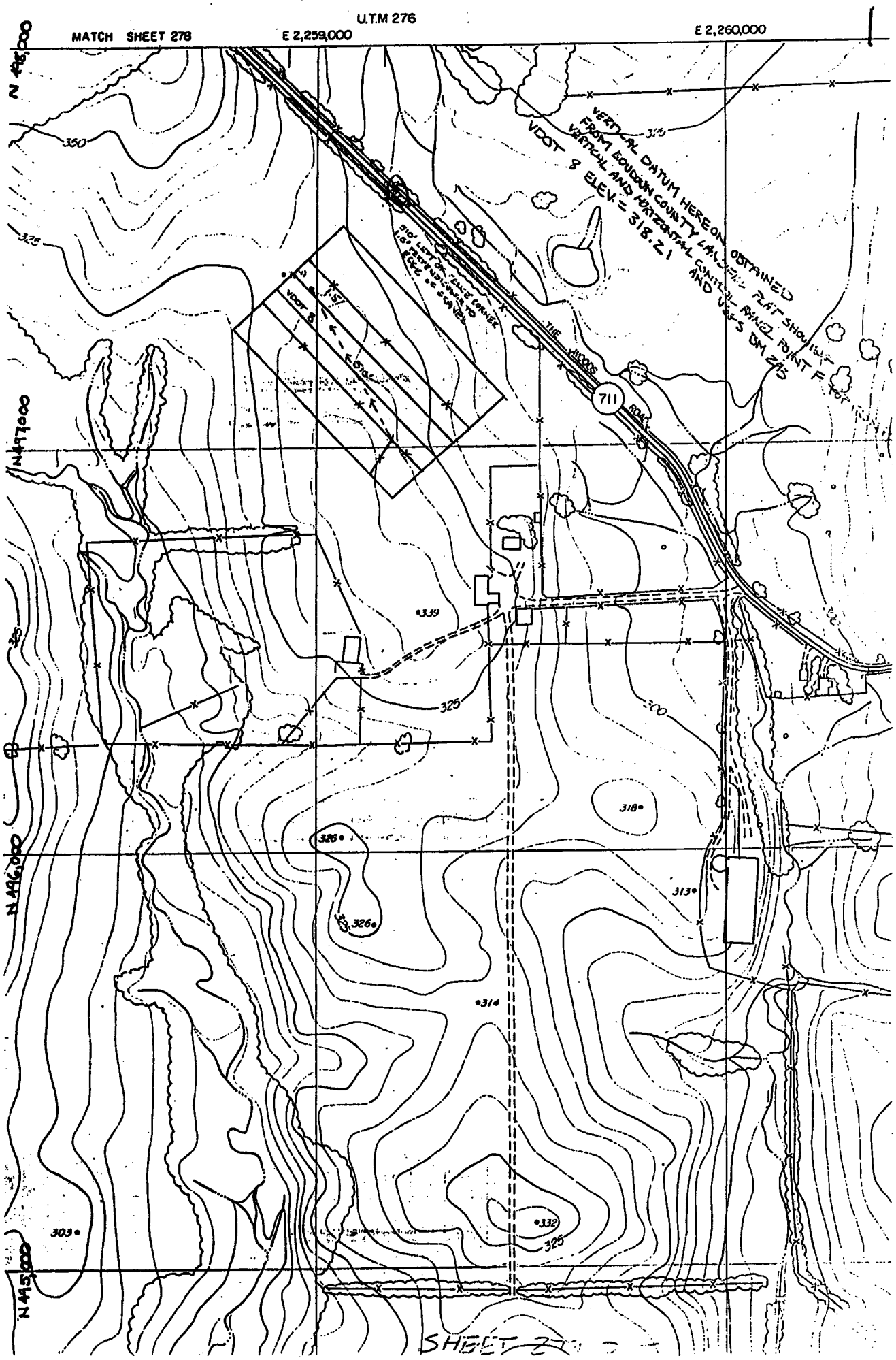
200 100 0 200 400 600 800 FEET

1 INCH : 60.9 METERS

100 75 50 25 0 100 200 METERS

CONTOUR INTERVAL 5 FEET

© 1987 County of Loudoun, Virginia


U.T.M 276
MATCH SHEET 278
E 2,259,000
E 2,260,000
N 498,000
N 497,000
N 496,000
N 495,000
VERTICAL DATUM HEREON OBTAINED
FROM BOUDOUN COUNTY LANDFILL PLAT SHOWING
VERTICAL AND HORIZONTAL CONTROL PANEL POINT
VDOT 8 ELEV. = 318.21
THE WOODS ROAD
711
VDOT 8
350
325
339
318
326
313
314
332
303
SHEET 2