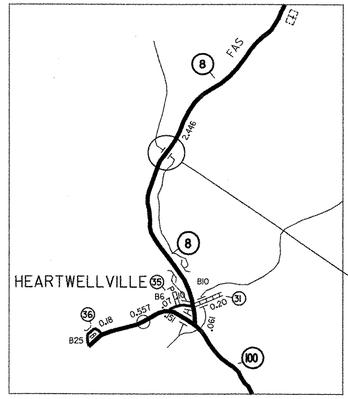
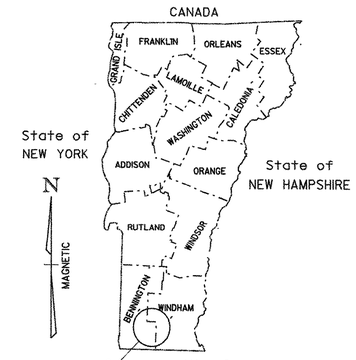
See Sheet 2 for Index of Sheets and List of Standards

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PROPOSED IMPROVEMENT
BRIDGE PROJECT

TOWN OF READSBORO
COUNTY OF BENNINGTON





ROUTE NO. : VT RTE 8, RURAL MAJOR COLLECTOR BRIDGE NO. : 02

PROJECT LOCATION : BEGINNING AT A POINT ON VT RTE 8, APPROXIMATELY 1.30 MILES NORTHERLY FROM ITS INTERSECTION WITH VT RTE 100 AND PROCEEDING NORTHERLY ALONG VT RTE 8 FOR APPROXIMATELY 0.10 MILES.

PROJECT DESCRIPTION : CONSTRUCTION OF A NEW PRECAST CONCRETE BOX CULVERT IN THE EXISTING LOCATION WITH RELATED CHANNEL AND APPROACH WORK.

LENGTH OF STRUCTURE:	N/A	FEET
LENGTH OF ROADWAY:	150.00	FEET
LENGTH OF PROJECT:	150.00	FEET

RECORD PLANS

CONTRACTOR: PIKE INDUSTRIES, INC. – BERLIN, VT

RESIDENT ENGINEER: FRED ROSS

CONSTRUCTION BEGAN: MAY 29, 2007

CONSTRUCTION COMPLETE: SEPTEMBER 22, 2007

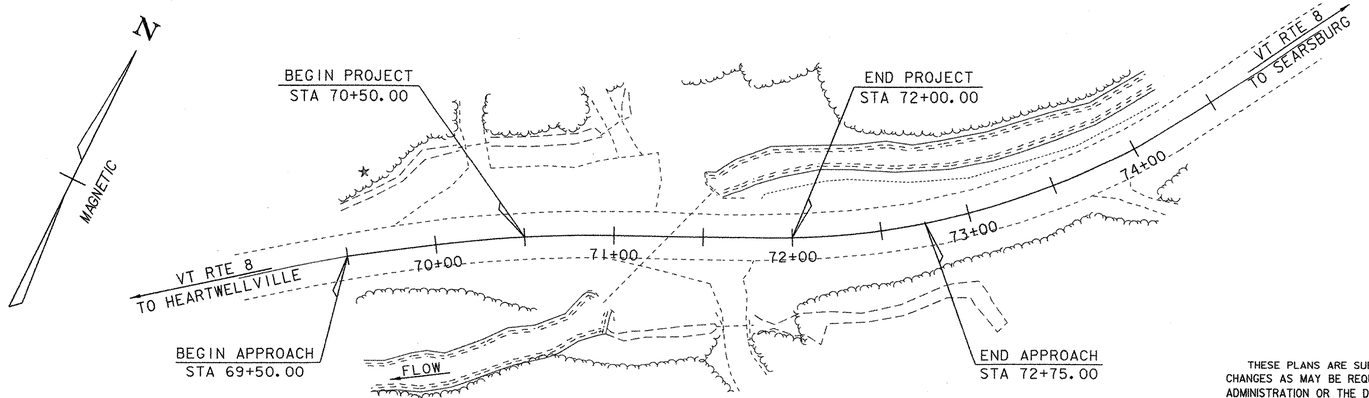
RECORD PLANS BY: FRED ROSS & MIKE BOOTH

I HEREBY CERTIFY THAT ALL THE CONSTUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY Richard H Ross III RESIDENT ENGINEER

DATE 3/19/09

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.



SCALE 1" = 40'-0
40 0 40

CONVENTIONAL SYMBOLS

COUNTY LINE	COUNTY LINE
TOWN LINE	TOWN LINE
LIMITS OF ACCESS	
POINT OF ACCESS	X
FENCE LINE	
STONE WALL	
TRAVELED WAY	
GUARD RAIL	
RAILROAD	
SURVEY LINE	
CULVERT	
POWER POLE	
TELEPHONE POLE	
TREES	
CONTROL OF ACCESS	
PROPERTY LINE	
R.O.W. TAKING LINE	
SLOPE RIGHTS	SR SR SR
TOP OF CUT	
TOE OF SLOPE	

SURVEYED BY : L. ORVIS
SURVEYED DATE : 11/2004

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.

CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2001, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JANUARY 4, 2001 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

PLOTTED 26-JUN-2006

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED Richard J Fitzsimmons DATE 6/27/06

PROJECT MANAGER : C.P. WILLIAMS

PROJECT NAME : READSBORO
PROJECT NUMBER : ~~ACSP~~ ST CULV (4)

SHEET 1 OF 39 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET

INDEX OF SHEETS

LIST OF STANDARDS

E-100	CONSTRUCTION APPROACH SIGNS	1/2/2004
E-102	CONSTRUCTION SIGN DETAILS	6/30/2003
E-102A	CONSTRUCTION SIGN DETAILS	5/1/2004
E-107	DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS	6/30/2003
E-107A	BREAKAWAY BARRICADE DETAILS	8/8/1995
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	8/8/1995
E-127	ROUTE MARKINGS AT RURAL INTERSECTIONS	8/8/1995
E-134	BRIDGE NUMBER PLAQUE	8/8/1995
E-136B	STATE ROUTE MARKER SIGN DETAILS	8/8/1995
E-160	FLANGED CHANNEL STEEL SIGN POST	5/20/1999
G-1	STEEL BEAM GUARDRAIL (50MPH & OVER) HEAVY DUTY STEEL BEAM GUARDRAIL TWISTED END TERMINAL ANCHOR FOR STEEL BEAM RAIL	1/3/2000
G-1D	STEEL BEAM GUARDRAIL (40MPH & LESS) HEAVY DUTY STEEL BEAM GUARDRAIL STEEL BEAM MEDIAN BARRIER ANCHOR FOR STEEL BEAM RAIL	1/3/2000
SB-R6-82	BRIDGE RAILING HEAVEY DUTY STEEL BEAM	1/9/1995

FINAL HYDRAULIC REPORT

PROJECT # : ST CULV (4)
HIGHWAY # : VT8
STREAM: Unnamed
STRUCTURE # : 2

HYDROLOGIC DATA

DRAINAGE AREA : 1.66 SM
CHARACTER OF TERRAIN : Rolling
STREAM CHARACTERISTICS :
NATURE OF STREAMBED :

PEAK FLOW DATA

Q 2.33 =	120 cfs	Q 50 =	520 cfs
Q 10 =	300 cfs	Q 100 =	650 cfs
Q 25 =	420 cfs	Q 500 =	

DATE OF FLOOD OF RECORD unknown
ESTIMATED DISCHARGE: unknown
WATER SURFACE ELEV.: unknown
NATURAL STREAM VELOCITY :
ICE CONDITIONS :
DEBRIS:
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY?
IS ORDINARY RISE RAPID?
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS?
IF YES, DESCRIBE:

WATERSHED STORAGE: HEADWATERS:
UNIFORM:
IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 107" x 73" CGMP
YEAR BUILT:
CLEAR SPAN(NORMAL TO STREAM):
VERTICAL CLEARANCE:
WATERWAY OF FULL OPENING:
DISPOSITION OF STRUCTURE: Removal of old structure
TYPE OF MATERIAL UNDER SUBSTRUCTURE: n/a

WATER SURFACE ELEVATIONS AT:

Q2.33 =		VELOCITY =	
Q10 =		"	
Q25 =		"	
Q50 =		"	
Q100 =		"	

LONG TERM STREAMBED CHANGES:

IS THE ROADWAY OVERTOPPED BELOW Q100:
FREQUENCY:
RELIEF ELEVATION:
DISCHARGE OVER ROAD @Q100:

UPSTREAM STRUCTURE

TOWN: DISTANCE:
HIGHWAY # : STRUCTURE #:
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:
STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: DISTANCE:
HIGHWAY # : STRUCTURE #:
CLEAR SPAN: CLEAR HEIGHT:

LOAD FACTOR - LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI
INVENTORY							
POSTED							
OPERATING							

COMMENTS:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2006	720	140	54	11	50
2026	940	160	54	17	100

20 year ESAL for flexible pavement from 2006 to 2026 : 299,000
40 year ESAL for flexible pavement from 2006 to 2046 : 737,000
Design Speed : 50 mph

YEAR BUILT: FULL WATERWAY:
STRUCTURE TYPE:

PROPOSED STRUCTURE

STRUCTURE TYPE: 12' x 8' Precast Concrete Box Culvert

CLEAR SPAN(NORMAL TO STREAM): 12'
VERTICAL CLEARANCE ABOVE STREAMBED: 6'
WATERWAY OF FULL OPENING: 72 sf

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1971.9'	VELOCITY=	
Q10 =	1972.8'	"	
Q25 =	1973.2'	"	
Q50 =	1974.7'	"	11.2 fps
Q100 =	1975.7'	"	

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY:
RELIEF ELEVATION:
DISCHARGE OVER ROAD @Q100: 0 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE:
VERTICAL CLEARANCE:

SCOUR:

REQUIRED CHANNEL PROTECTION: Type II Stone Fill

PERMIT INFORMATION

AVERAGE DAILY FLOW:	3.3 cfs	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	1.7 cfs	< 0.5'
ORDINARY HIGH WATER:	52 cfs	0.7'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: 54" CMP or Equal
CLEAR SPAN (NORMAL TO STREAM): n/a
VERTICAL CLEARANCE ABOVE STREAMBED: n/a
WATERWAY AREA OF FULL OPENING: 15.9 sq. ft.

ADDITIONAL INFORMATION

DESIGN CRITERIA

1. DESIGN LIVE LOAD AASHTO HS - 25
2. DESIGN SPAN
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL
   ON LEDGE
4. ALLOWABLE LOAD FOR PILING
   TYPE
   ESTIMATED LENGTH
5. STRUCTURAL STEEL AASHTO M270M/M270 GRADE
6. REINFORCING STEEL GRADE 60
7. CONCRETE, HIGH PERFORMANCE CLASS A f'c: 4000 psi (excluding precast concrete)
   CONCRETE, HIGH PERFORMANCE CLASS B f'c: N/A
8. DESIGN SOIL UNIT WEIGHT 140 pcf
9. DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL

TRAFFIC MAINTENANCE

1. IS TRAFFIC TO BE MAINTAINED? no
   IF YES, ON EXISTING STRUCTURE?
   OR ON TEMPORARY BRIDGE?
   ONE OR TWO-WAY TRAVEL?
2. TRAFFIC CONTROL SIGNALS REQUIRED? no
3. ARE SIDEWALKS REQUIRED? no
   IF SO, ON WHAT SIDE?

PROJECT NAME: READSBORO
PROJECT NUMBER: ST CULV (4)

FILE NAME: 04c176/Str/s04c176excel.dgn
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: E.L.RUSTAY
PRELIMINARY INFORMATION SHEET #1

PLOT DATE: 4/5/2006
DRAWN BY: M.FESSEL
CHECKED BY: M.GAGULIC
SHEET 2 OF 39

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	EROSION CONTROL	BRIDGE	FULL C. E. ITEMS
1			
880			
		60	
130			
NO GRANULAR BORROW CALLED FOR AS DESIGNED —40			
		900	
		480	
380			
40			
3			
338			
		8	
		530	
		3	
		100	
		50	
1			
		1	
10			
1			
		10	
	10		
	10		
		60	
		100	
		35	
		1	
	680		
244			
1			
3			
271			
120			
240			
			1
			1
			1
1			
1			

TOTALS

GRAND TOTAL	FINAL
1	
880	
60	
130	
~~40~~	
900	
480	
380	
40	
3	
338	
8	
530	
3	
100	
50	
1	
1	
10	
1	
10	
10	
10	
60	
100	
35	
1	
680	
244	
1	
3	
271	
120	
240	
1	
1	
1	
1	
1	

DESCRIPTIONS

UNIT	ITEMS	ITEM NUMBER	ROUND
LS	CLEARING AND GRUBBING (INCL. INDV. TREES & STUMPS)	201.10	
CY	COMMON EXCAVATION	203.15	
CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
CY	SAND BORROW	203.31	
~~CY~~	~~GRANULAR BORROW~~	~~203.32~~	
CY	STRUCTURE EXCAVATION	204.25	
CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	
CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	
CY	AGGREGATE SURFACE COURSE	401.10	
CWT	EMULSIFIED ASPHALT	404.65	
TON	BITUMINOUS CONCRETE PAVEMENT (PG 58-34)	406.25	
CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33	
LB	EPOXY COATED REINFORCING STEEL	507.17	
GAL	WATER REPELLENT (MOD. - SILANE)	514.10	
SY	SHEET MEMBRANE WATERPROOFING (PREFORMED)	519.20	
LF	BRIDGE RAILING - HD STEEL BEAMGURB MOUNTED (MOD. - PEDESTAL MOUNTED)	525.40	
EACH	REMOVAL OF STRUCTURE (794 SF - EST.)	529.15	
LS	PRECAST CONCRETE STRUCTURE (12'-0" X 8'-0" X 88'-0" BOX) (MOD.)	540.10	
HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	609.25	
TON	DUST AND ICE CONTROL WITH CALCIUM CHLORIDE	609.15	
CY	STONE FILL, TYPE I	613.10	
CY	STONE FILL, TYPE I (MOD. - CHECK DAMS)	613.10	
CY	STONE FILL, TYPE I (MOD. - CONSTRUCTION ENTRANCE)	613.10	
CY	STONE FILL, TYPE II	613.11	
CY	STONE FILL, TYPE II (MOD.)	613.11	
CY	STONE FILL, TYPE IV (MOD.)	613.13	
LS	TEMPORARY RELOCATION OF STREAM	614.10	
LF	SNOW FENCE (MOD. - PDF)	620.70	
LF	HEAVY DUTY STEEL BEAM GUARD RAIL (GALVANIZED)	621.21	
EACH	BREAKAWAY CABLE TERMINAL	621.60	
EACH	ANCHOR FOR STEEL BEAM RAIL	621.60	
LF	REMOVL AND DISP OF GUARD RAIL	621.80	
HR	UNIFORMED TRAFFIC OFFICERS	630.10	
HR	FLAGGERS	630.15	
LS	FIELD OFFICE-ENGINEERS	631.10	
LS	TESTING EQUIPMENT - CONCRETE	631.16	
LS	TESTING EQUIPMENT - BITUMINOUS	631.17	
LU	FIELD OFFICE - TELEPHONE (N.A.B.I.)	631.25	
LS	MOBILIZATION / DEMOBILIZATION	635.11	
LS	TRAFFIC CONTROL	641.10	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		EARTHWORKS SUMMARY
		FILL AVAILABLE
680	CY	COMMON EXCAVATION: 680 X1.0
18	CY	UNCLASSIFIED CHANNEL EXCAVATION: 60 X 0.3
270	CY	STRUCTURE EXCAVATION: 900 X 0.3
968	CY	SUBTOTAL
2	CY	ROUNDING
970	CY	TOTAL
970	CY	FILL AVAILABLE
0	CY	FILL REQUIRED
970	CY	WASTE

PROJECT NAME: **READSBORO**
PROJECT NUMBER: **ST CULV (4)**

FILE NAME: s04c176qs.xls
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: E.L.RUSTAY
QUANTITY SHEET #1

PLOT DATE: 07/12/2006
DRAWN BY: M.FESSEL
CHECKED BY: M.GAGULIC

STATE OF VERMONT
AGENCY OF TRANSPORTATION

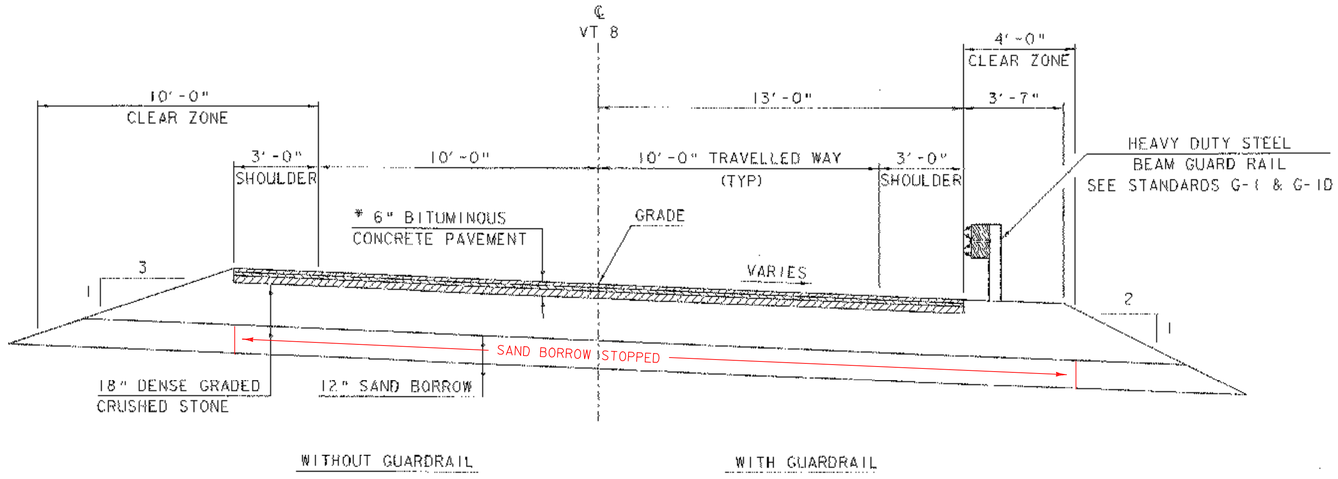
QUANTITY SHEET

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES		
							ROADWAY	EROSION CONTROL	BRIDGE	F.U.L.C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
							1				1		LS	PUBLIC RELATIONS OFFICER	641.12				
							28				28		DAY	PORTABLE CHANGEABLE MESSAGE SIGN RENTAL	641.17				
							~~650~~				~~650~~		LF	~~DURABLE 4" WHITE LINE (THERMOPLASTIC)~~	~~646.40~~				
							~~650~~				~~650~~		LF	~~DURABLE 4" YELLOW LINE (THERMOPLASTIC)~~	~~646.41~~				
							650				650		LF	TEMPORARY 4" WHITE LINE	646.60				
							650				650		LF	TEMPORARY 4" YELLOW LINE	646.61				
									85		85		SY	GEOTEXTILE UNDER STONE FILL	648.31				
								180			180		SY	GEOTEXTILE FOR SILT FENCE	649.51				
								35			35		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61				
								10			10		LB	SEED	651.15				
								10			10		LB	SEED-WINTER RYE	651.17				
								100			100		LB	FERTILIZER	651.18				
								1			1		TON	AGRICULTURAL LIMESTONE	651.20				
								1			1		TON	HAY MULCH	651.25				
							30	20			50		CY	TOPSOIL	651.35				
									60		60		SY	GRUBBING MATERIAL	651.40				
								1			1		LS	EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.10				
								40			40		HR	MONITORING EROSION PREVENTION & SEDIMENT CONTROL PLAN	652.20				
								1			1		LU	MAINTENANCE OF EROSION PREVENTION & SEDIMENT CONTROL PLAN (N.A.B.I.)	652.30				
								70			70		SY	EROSION MATTING	654.10				
							67				67		SF	TRAFFIC SIGNS, TYPE A	675.20				
							14.5				14.5		LF	FLANGED CHANNEL SIGN POST	675.301				
							2				2		EACH	REMOVING SIGNS	675.50				
							1				1		LU	INCENTIVE/DISINCENTIVE WORK ORDER (N.A.B.I.)	995.10				

DID NOT USE DURABLES PAINTED BY STATE FORCES

PROJECT NAME: **READSBORO**
PROJECT NUMBER: **ST CULV (4)**

FILE NAME: **s04c176qs.xls** PLOT DATE: **07/12/2006**
PROJECT MANAGER: **C.P.WILLIAMS** DRAWN BY: **M.FESSEL**
DESIGNED BY: **E.L.RUSTAY** CHECKED BY: **M.GAGULIC**
QUANTITY SHEET #2 SHEET **4** OF **39**



MATERIAL ITEM	TOLERANCE
PAVEMENT	±1/4" TOTAL THICKNESS
AGGREGATE SURFACE COURSE	±1/2"
BASE COURSE	±1/2"
SUBBASE	± 1"
SAND BORROW	± 1"
GRANULAR BORROW	± 1"

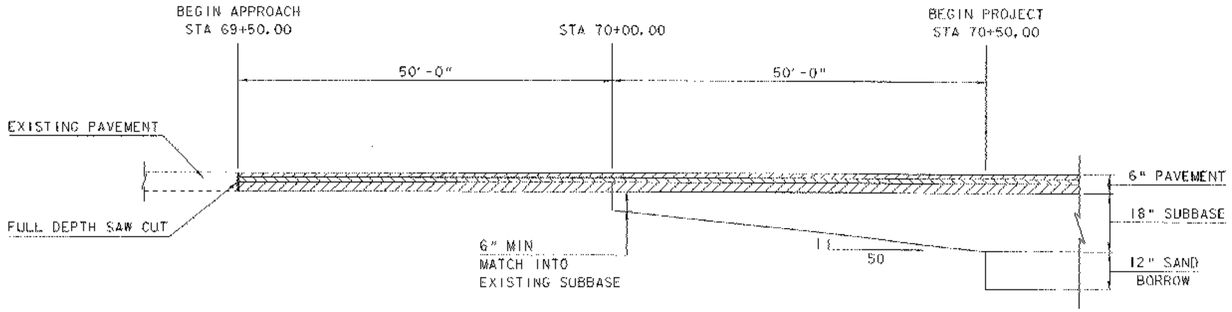
* 1½" TYPE 1, 11, OR 1V OVER
1½" TYPE 111 OR 1V OVER
3" TYPE I OR II

VT ROUTE 8 TYPICAL SECTION

SCALE 3/8" = 1'-0

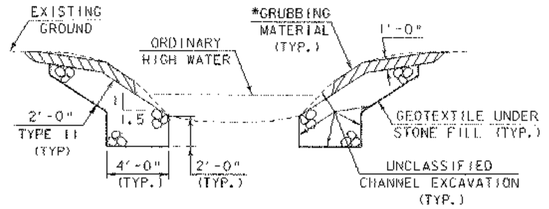
0 1 2 3 4

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176typ.dgn	
IPARM FILE NAME: s04c176typ.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
TYPICAL SECTION	SHEET: 5 OF 39



BEGIN PROJECT MATERIAL TRANSITION

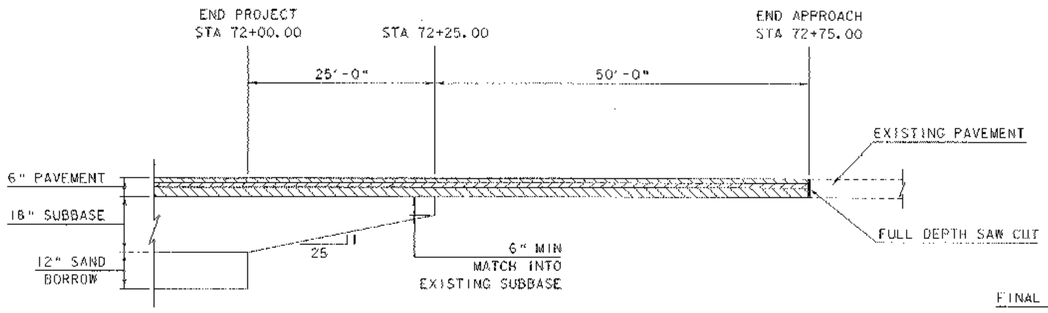
(NTS)



TYPICAL CHANNEL SECTION

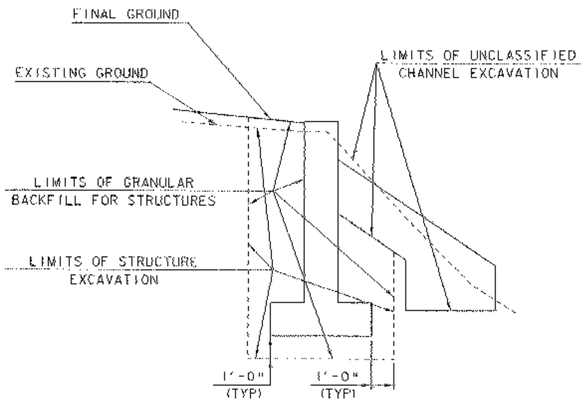
(NOT TO SCALE)

*GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.



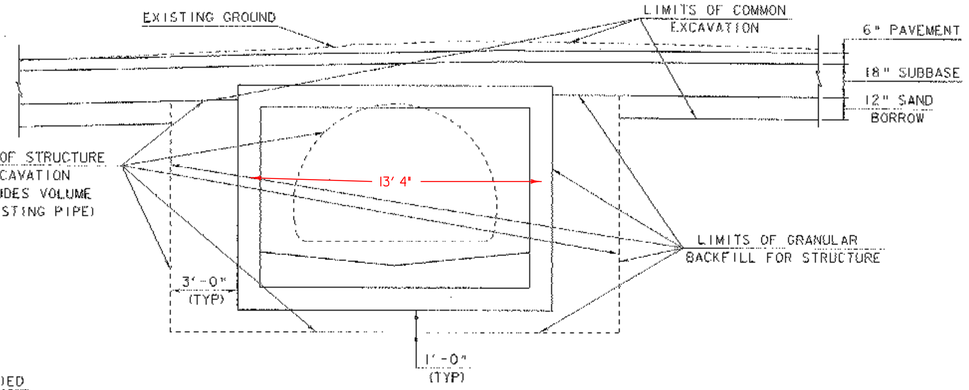
END PROJECT MATERIAL TRANSITION

(NTS)



TYPICAL WINGWALL EXCAVATION AND FILL DETAIL

(NOT TO SCALE)



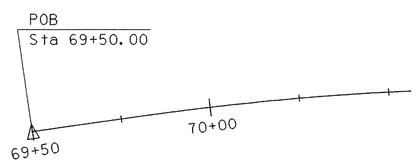
TYPICAL CONCRETE BOX EXCAVATION AND FILL DETAIL

(NOT TO SCALE)

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176typ.dgn	
IPARM FILE NAME: s04c176excdet.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
EXCAVATION & TRANSITION DETAILS	SHEET: 6 OF 39

MAINLINE ALIGNMENT INFORMATION

MAINLINE POB STA 69+50.00



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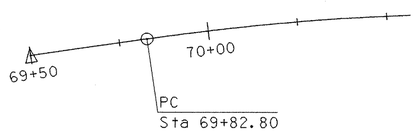
MAINLINE PC #1 STA 69+82.80



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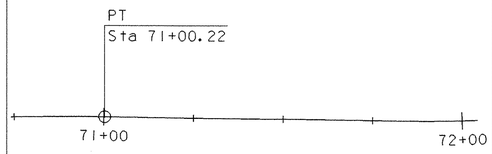
MAINLINE PT #1 STA 71+00.22



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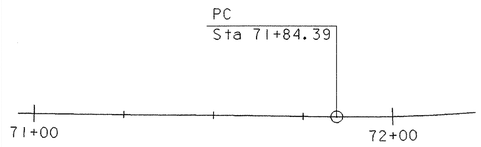
E = 50108.8362

MAINLINE PC #2 STA 71+84.39



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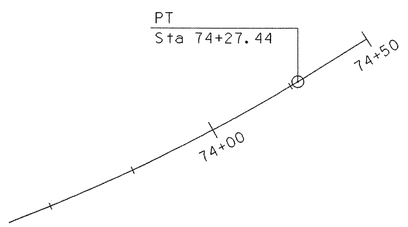

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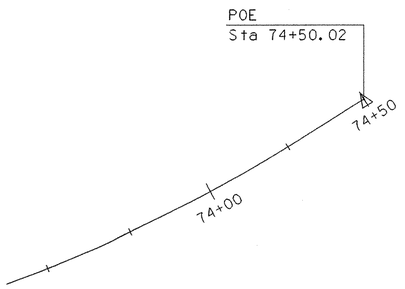
E = 50362.5564

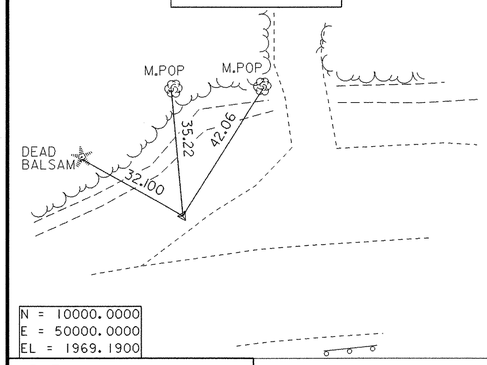
MAINLINE POE STA 74+50.02



N = 10249.6335
E = 50374.3612

TRAVERSE TIE

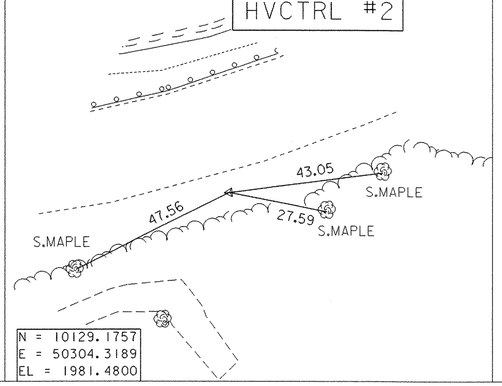
HVCTRL #1



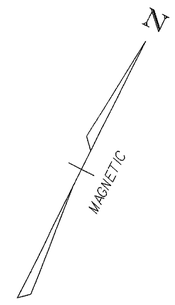
N = 10000.0000
E = 50000.0000
EL = 1969.1900

TRAVERSE TIE

HVCTRL #2



N = 10129.1757
E = 50304.3189
EL = 1981.4800



SCALE 1" = 20'

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

PROJECT: READSBORO
PROJECT NO.: ST CULV (4)

DESIGN FILE NAME: 04c176/Structures/s04c176bdr.dgn
IPARM FILE NAME: s04c176tie.i
PLOT DATE: 18-JUL-2006
SURVEYED BY: L.ORVIS
SURVEY DATE: 11/2004
SQUAD LEADER: C.P.WILLIAMS
DRAWN BY: M.FESSEL
ALIGNMENT & TRAVERSE TIE SHEET
SHEET: 7 OF 39

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
STA 71+27.00 LT - 72+75.00 LT
STA 70+25.00 RT - 71+52.00 RT

HEAVY DUTY STEEL BEAM GUARDRAIL
STA 71+21.00 LT - 71+32.45 LT
STA 71+57.45 LT - 72+25.00 LT
STA 70+25.00 RT - 71+03.04 RT
STA 71+28.04 RT - 71+56.00 RT

HEAVY DUTY STEEL BEAM GUARDRAIL (MOD. PEDESTAL MOUNTED)
STA 71+32.45 LT - 71+57.45 LT
STA 71+03.04 RT - 71+28.04 RT

ANCHOR FOR STEEL BEAM GUARDRAIL
STA 71+27.00 LT
STA 70+32.00 RT
STA 71+34.00 RT

CONSTRUCT DRIVE
STA 71+67.00 RT (5' PAVED APRON)

REMOVE TRAFFIC SIGNS
STA 70+94.96 RT
STA 71+74.10 LT

NEW TRAFFIC SIGNS, TYPE A
STA 70+90.00 RT
STA 71+75.00 LT

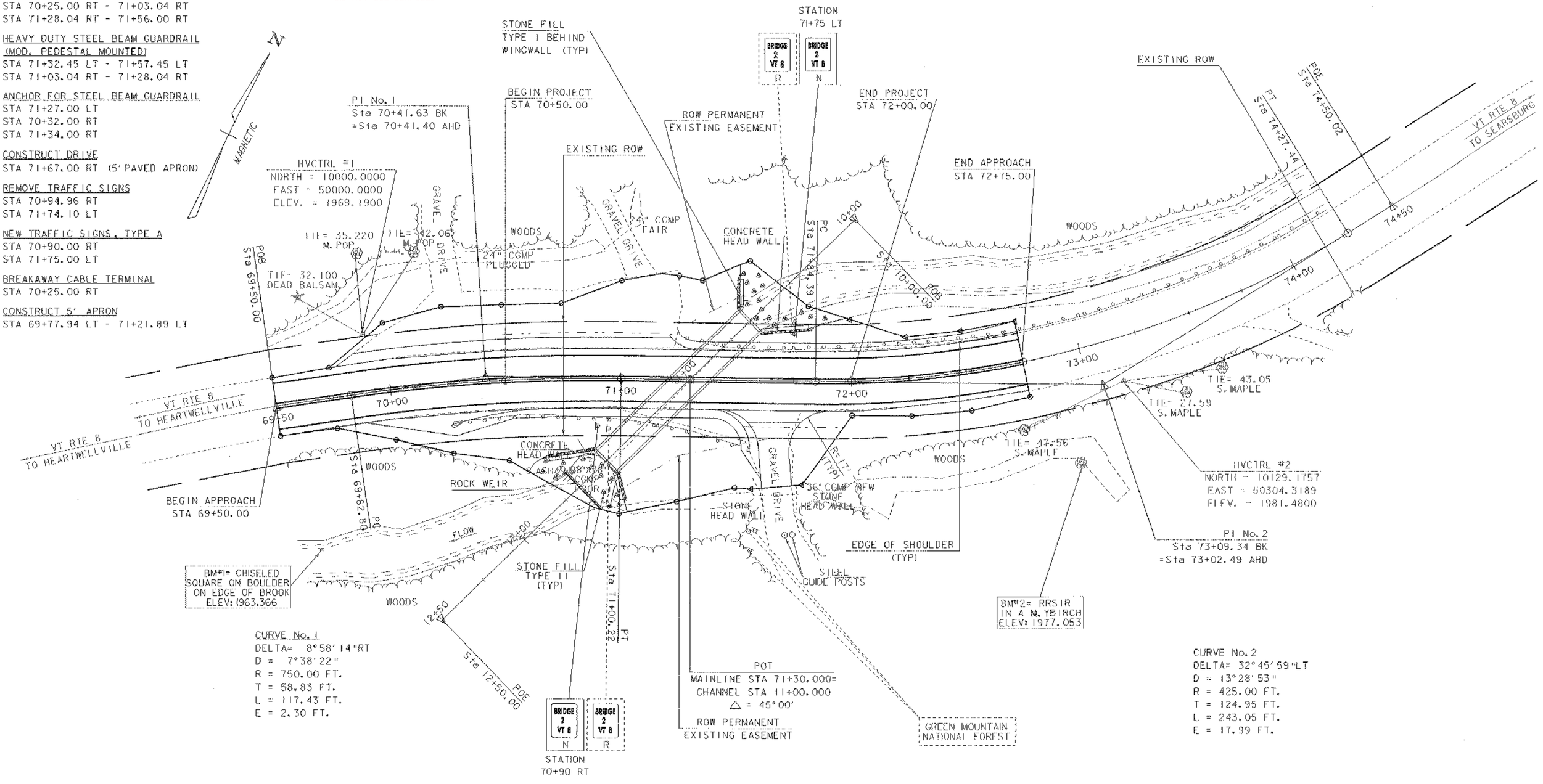
BREAKAWAY CABLE TERMINAL
STA 70+25.00 RT

CONSTRUCT 5' APRON
STA 69+77.94 LT - 71+21.89 LT

~~DURABLE 4" WHITE LINE~~
~~STA 69+50.00 LT - 72+75.00 LT~~
~~STA 69+50.00 RT - 72+75.00 RT~~

~~DURABLE 4" YELLOW LINE (DOUBLE)~~
~~STA 69+50.00 - 72+75.00~~

DID NOT USE DURABLES



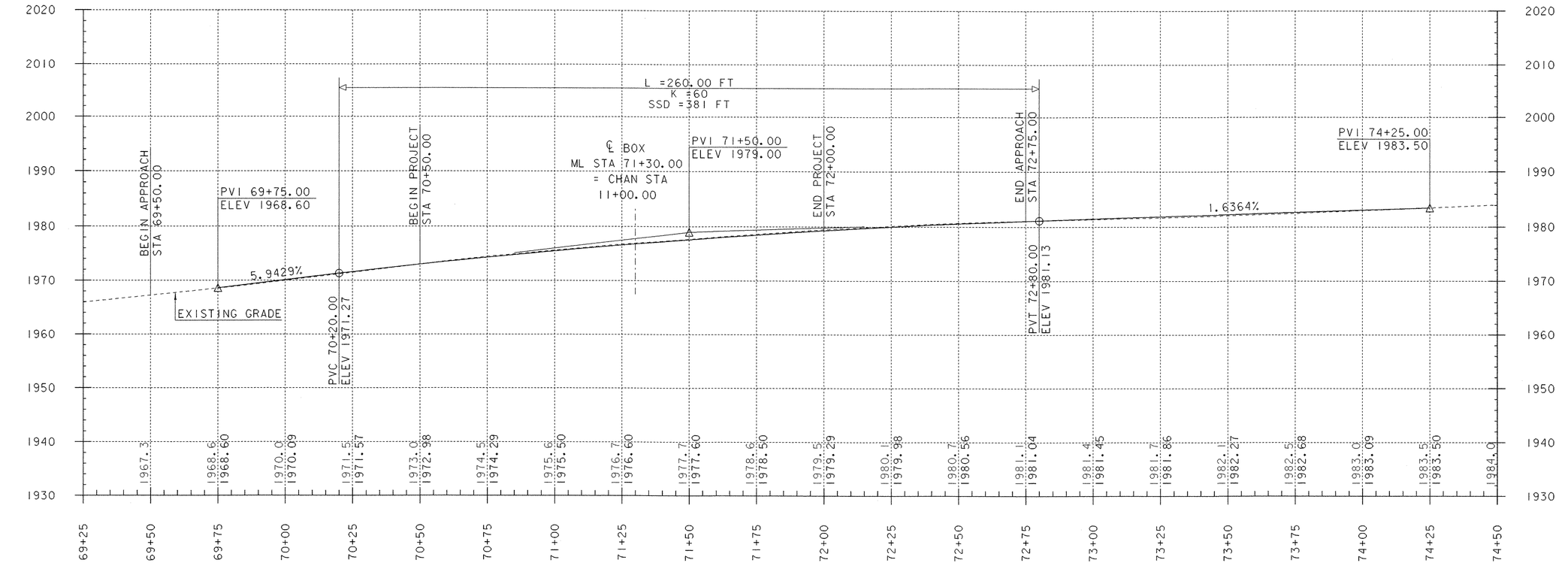
DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

LEGEND
R - REMOVE
N - NEW

LAYOUT
SCALE 1" = 20'-0
20 0 20

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176bdr.dgn	
IPARM FILE NAME: s04c176lay.i	PLOT DATE: 18-JUL-2006
SURVEYED BY: L.G.ORVIS	SURVEY DATE: 11/2004
SQUAD LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
LAYOUT	SHEET: 8 OF 39

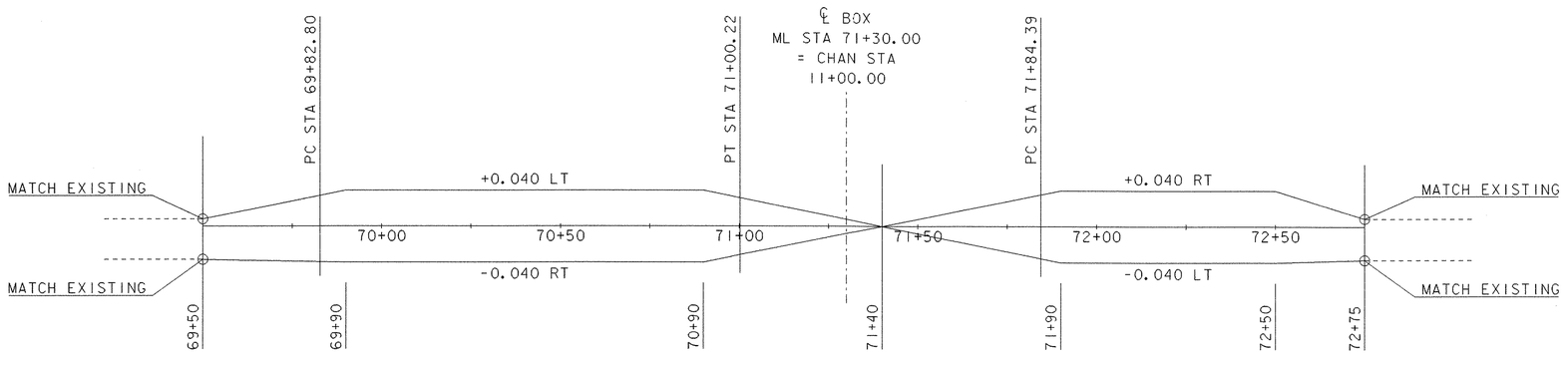
VT 8 MAINLINE PROFILE



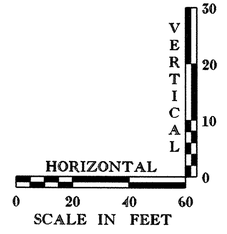
NOTES:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄.

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE PROPOSED GROUND ALONG ℄.



BANKING DIAGRAM



PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176pro.dgn	
IPARM FILE NAME: s04c176pro.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
VT 100 PROFILE & BANKING DIAGRAM	SHEET: 9 OF 39

TRAFFIC CONTROL NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DETOUR SIGNAGE AS SHOWN ON THIS PLAN.

TRAFFIC CONTROL WARNING SIGNS SHALL BE PROVIDED PER STANDARDS E-100, E-102 AND E-102A. ADDITIONAL PROJECT CONSTRUCTION SIGNS SHALL BE INSTALLED AS REQUIRED BY THE RESIDENT ENGINEER. PAYMENT FOR THESE SIGNS SHALL BE INCLUDED IN ITEM 641.10 "TRAFFIC CONTROL".

PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE PLACED AT THE APPROXIMATE LOCATIONS SHOWN ON THE PLANS OR WHERE DESIGNATED BY THE RESIDENT ENGINEER. THE SIGNS SHALL BE PLACED 7 DAYS PRIOR TO THE START OF CONSTRUCTION TO WARN OF THE IMPENDING DETOURS. THEY SHALL BE REMOVED ONCE CONSTRUCTION HAS BEGUN. PAYMENT FOR THESE SIGNS SHALL BE INCLUDED IN ITEM 641.17 "PORTABLE CHANGEABLE MESSAGE SIGN RENTAL".

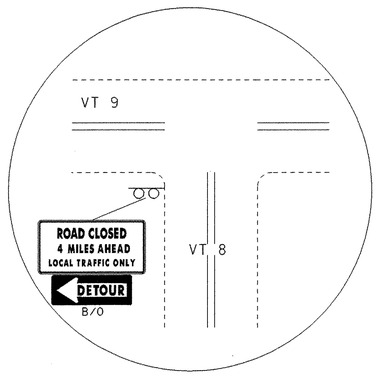
THE STATE ROUTE MARKERS USED FOR THE DETOUR AS SHOWN ON THE PLANS, SHALL FOLLOW STANDARDS E-127 AND E-136B. THESE SIGNS SHALL BE REMOVED AT THE END OF THE CONSTRUCTION PERIOD. THESE SIGNS AND THEIR REMOVAL SHALL BE PAID FOR UNDER ITEM 641.10 "TRAFFIC CONTROL"

THE CONTRACTOR SHALL INCLUDE ITEM 641.12 "PUBLIC RELATIONS OFFICER" FOR THE COORDINATION OF DETOUR INFORMATION AND TRAFFIC DELAYS FOR THE PUBLIC.

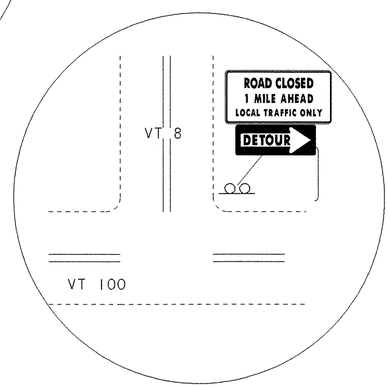
ACCESS TO ALL EXISTING DRIVES SHALL BE MAINTAINED AT ALL TIMES DURING ALL PHASES OF CONSTRUCTION.

INSTALLATION OF DETOUR SIGNS SHALL NOT BLOCK ANY EXISTING TRAFFIC CONTROL SIGN ASSEMBLIES. CONTRACTOR SHALL TRY TO MAINTAIN AT LEAST 200 FEET BETWEEN SIGN ASSEMBLIES.

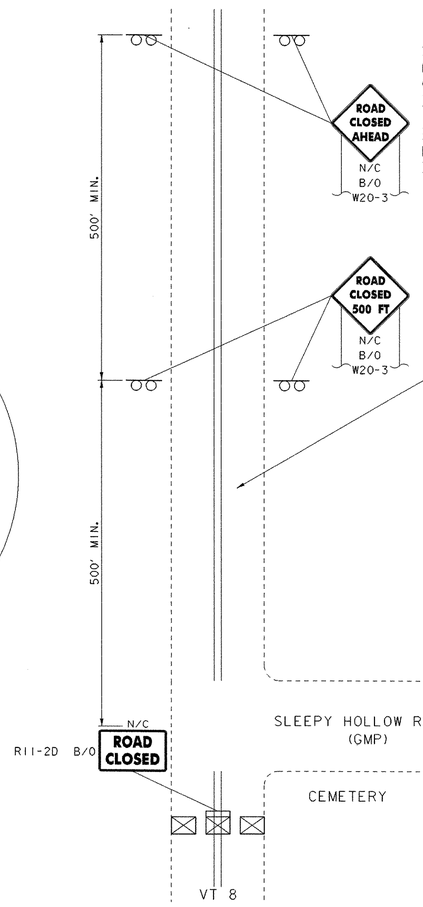
CONTACT DIG-SAFE AT 1-888-344-7233 PRIOR TO BREAKING GROUND TO INSTALL ANY SIGN POSTS.

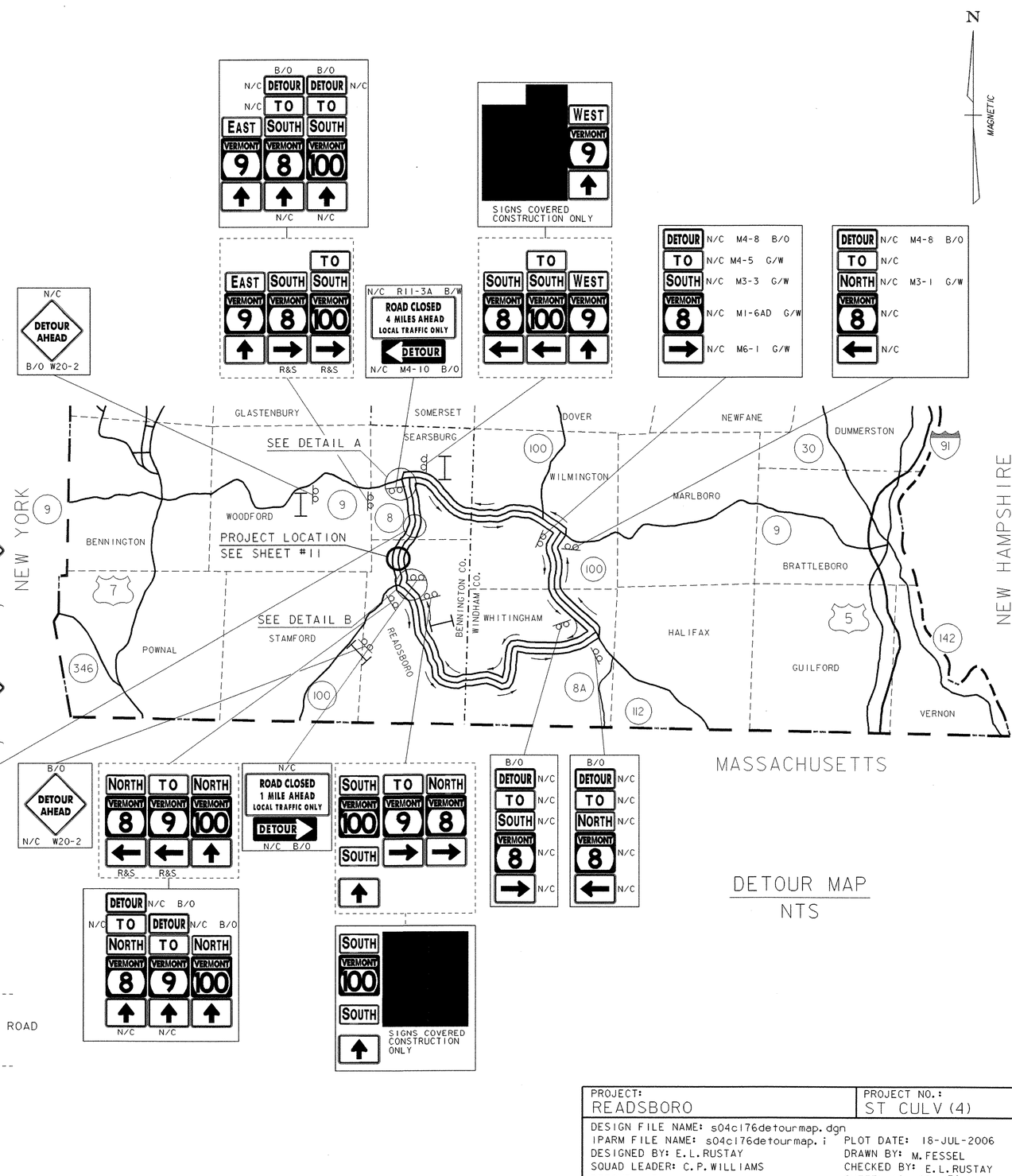


DETAIL A
NTS



DETAIL B
NTS





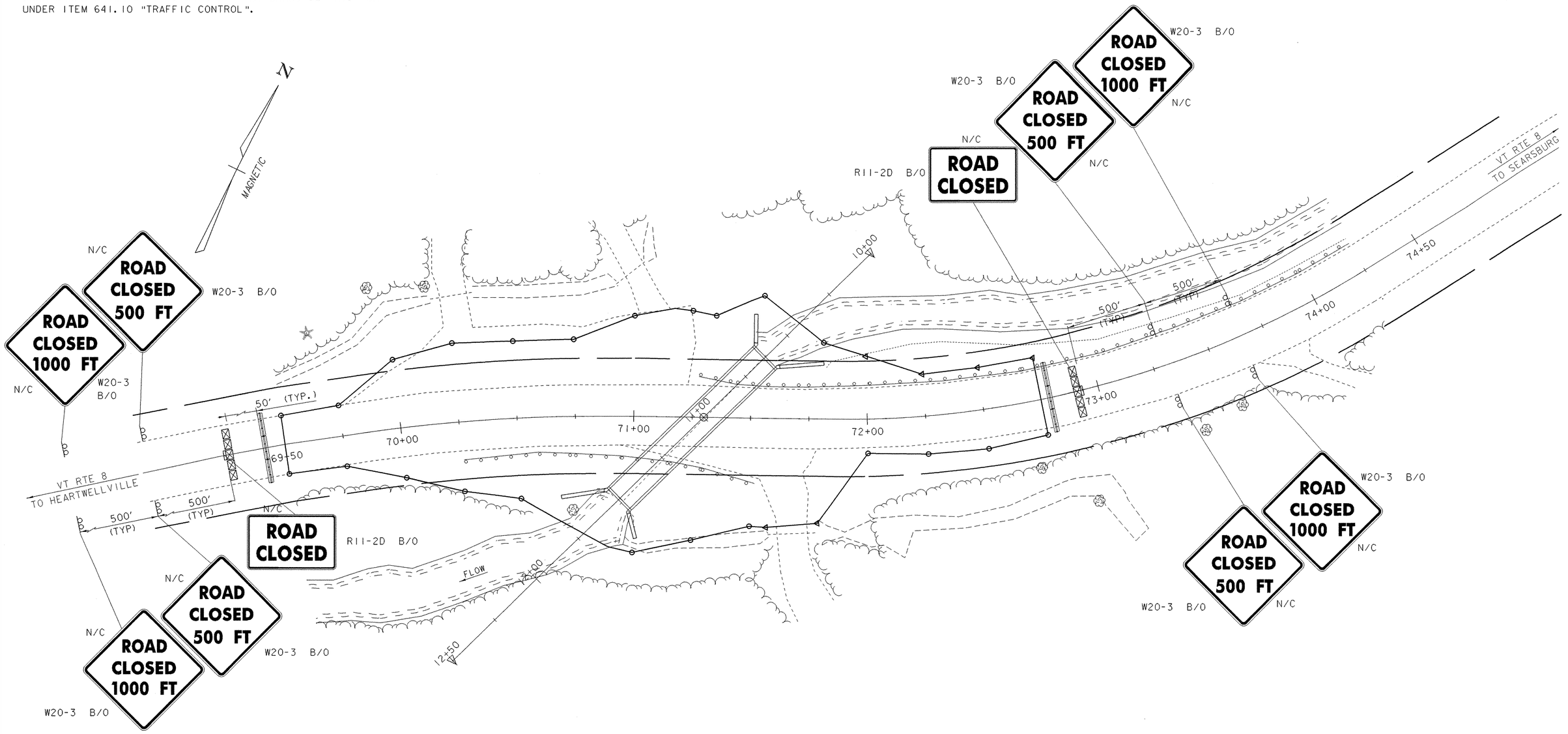
DETOUR MAP
NTS

LEGEND
N/C - NEW/CONSTRUCTION ONLY
R&S - REMOVE & SALVAGE
B/O - BLACK/ORANGE
G/W - GREEN/WHITE
O/B - ORANGE/BLACK
☒ - TYPE III BARRICADE
☒ - TYPE III BARRICADE (MOD.)
I - PORTABLE CHANGEABLE MESSAGE SIGN

PROJECT: READSBORO	PROJECT NO.: ST CULV(4)
DESIGN FILE NAME: s04c176detourmap.dgn	
IPARM FILE NAME: s04c176detourmap.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: E.L.RUSTAY
DETOUR MAP	SHEET: 10 OF 39

NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR SIGNS AND BARRICADES SHOWN ON THIS SHEET. THEY SHALL BE PAID FOR UNDER ITEM 641.10 "TRAFFIC CONTROL".



LEGEND
N/C - NEW/CONSTRUCTION ONLY
B/O - BLACK/ORANGE
☒ - TYPE III BARRICADE
☒ - TYPE III BARRICADE (MOD.)
TEMPORARY TRAFFIC BARRIER

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

TRAFFIC CONTROL
SCALE 1" = 20'-0
20 0 20

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176bdr.dgn	
IPARM FILE NAME: s04c176trfctrl.i	PLOT DATE: 18-JUL-2006
SURVEYED BY: L.ORVIS	SURVEY DATE: 11/2004
SQUAD LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
TRAFFIC CONTROL	SHEET: 11 OF 39

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS			NEW & SALVAGED SIGNS				EXIST POST		NEW SIGN POSTS																				REMARKS	SIGN DETAIL	
		EA	WIDTH (in)	HEIGHT (in)	"A"	"B"	SALV SIGN	SALV TIS	RETAIN	SALVAGE	NO. OF POSTS	FLANGED CHANNEL lb/ft			SQUARE STEEL (in) lb/ft			ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (in) lb/ft			FOUND-ATION	TUBULAR STEEL Ø (in) lb/ft				W-SHAPE STEEL FTG. SIZE		WEIGHT	POST SIZE	SIGN FRAME REQUIRED		DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
															1.75	2.0	2.5			3.0	4.0	4.0 MOD		3.0	3.5	4.0	5.0	24"	30"						
												1.12	2.0	3.0	1.88	2.16	3.35			1.3	1.7	1.7		7.6	9.0	10.8	14.6								
												OPTION ITEMS																							
70+90.00 RT	BRIDGE 2 VT 8	1	6	8	0.33							X																						E-134
71+75.00 LT	BRIDGE 2 VT 8	1	6	8	0.33								X																					E-134

FINAL POST LENGTHS ARE TO BE DETERMINED IN THE FIELD. POST SIZES ARE COMPUTED BASED ON INFORMATION FURNISHED ON THE STANDARD SHEETS AND THE TRAFFIC & SAFETY DIVISION'S "SIGN POST DESIGN GUIDELINE."

	0.67					FT 6.25	FT 8.25	FT	FT	FT	FT		EA	LB	LB	LB		LB	LB	LB	LB										
TOTALS	SF 0.67	SF	EA.	SF		FT 14.50			FT					LB			EA.	LB				EA.	EA.	LB								

PROJECT NAME: READSBORO
PROJECT NUMBER: ST CULV(4)

FILE NAME: structures/s04cl76tss.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: E.L.RUSTAY
TRAFFIC SIGN SHEET SUMMARY

PLOT DATE: 18-JUL-2006
DRAWN BY: E.L.RUSTAY
CHECKED BY: M.GAGULIC
SHEET 12 OF 39

PI No. 1
STA 70+41.63 BK
= STA 70+41.40 AHD

BEGIN PROJECT
STA 70+50.00

PT
STA 71+00.22

PAY LIMITS FOR BRIDGE RAILING
4 SPACES @ 6'-3" ITEM 525.40:
BRIDGE RAILING HD STEEL
BEAM/CURB MOUNTED
(MOD. - PEDESTAL MOUNTED)

4 SPACES
@ 3'-1½"

SCHEDULE I
APPROACH
(TYP - UNO)

14 SPACES @ 6'-3"

END PROJECT
STA 72+00.00

MATCH INTO EXISTING
GUARDRAIL

EXISTING
GUARDRAIL

END APPROACH
STA 72+75.00

PI No. 2
STA 73+09.34 BK
= STA 73+02.49 AHD

PAY LIMITS FOR BRIDGE RAILING
4 SPACES @ 6'-3" ITEM 525.40:
BRIDGE RAILING HD STEEL BEAM/CURB
MOUNTED (MOD.-PEDESTAL MOUNTED)

BREAKAWAY CABLE
TERMINAL

STONE FILL
TYPE II
(TYP)

1'-0" STONE FILL
TYPE I
(TYP)

R = 5'
(TYP)

VARIES

ML STA 71+30.000=
CHA STA 11+00.000
Δ =45°00'

PC
STA 71+84.39

R=17'
(TYP)

ROCK WEIR

FLOW

1:10

1:3

1:4

70+00

71+00

72+00

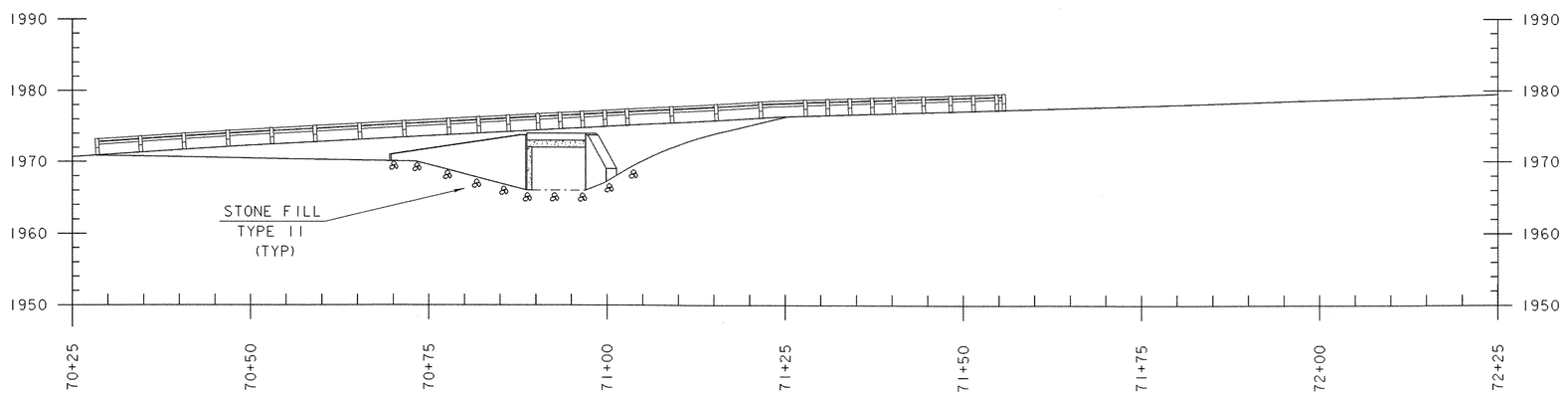
73+00

N

MAGNETIC

PLAN

SCALE 1" = 10'-0
10 0 10



ELEVATION @ DOWNSTREAM FASCIA

SCALE 1" = 10'-0
10 0 10

PROJECT NAME:	READSBORO
PROJECT NUMBER:	ST CULV (4)
FILE NAME: 04c176/Str/s04c176pe.dgn	PLOT DATE: 18-JUL-2006
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
DESIGNED BY: E.L.RUSTAY	CHECKED BY: M.GAGULIC
PLAN AND ELEVATION	SHEET 13 OF 39

GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2001, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, DATED 2002, AND ITS LATEST REVISIONS.

2. DESIGN IS FOR HS-25-44 LIVE LOADING.

3. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68°F OR AS NOTED OTHERWISE.

4. ITEM 529.15 "REMOVAL OF STRUCTURE" SHALL BE USED FOR REMOVAL OF THE PIPE AND ANY PORTIONS OF HEADWALLS AND WINGWALLS NOT REMOVED UNDER THE ITEMS "STRUCTURE EXCAVATION" OR "UNCLASSIFIED CHANNEL EXCAVATION".

5. A MINIMUM OF 1'-9" COVER OVER THE BOX MUST BE PROVIDED BEFORE ALLOWING ANY VEHICLE OVER THE NEW STRUCTURE.

6. TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT A RATE OF 0.015 GAL/SY BETWEEN SUCCESSIVE COURSES OF PAVEMENT OR AS DIRECTED BY THE ENGINEER.

7. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:

   SPACING +/- 1"
   CLEARANCE +/-¼"

8. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED SURFACES OF THE WINGWALLS AND HEADWALLS AND SHALL BE PAID FOR USING ITEM 514.10 "WATER REPELLENT (MOD. - SILANE)". WATER REPELLENT SHALL BE APPLIED TO THE EXPOSED INSIDE SURFACE OF THE BOX STARTING AT THE OPENING AT EACH END AND EXTENDING 3 FEET INTO THE BOX, INCLUDING THE BOTTOM SURFACE OF THE TOP SLAB AND THE TOP SURFACE OF THE BOTTOM SLAB.

9. THE KEY IN CONCRETE CONSTRUCTION JOINTS SHALL BE MONOLITHIC AND CONTINUOUS FOR THE FULL LENGTH OF THE JOINT.

10. JOINTS AND SCORE MARKS IN THE CONCRETE SHALL BE CONSTRUCTED AS INDICATED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

11. NO SUB-SURFACE INVESTIGATION HAS BEEN CONDUCTED ON THIS PROJECT. LEDGE OR BOULDERS MAY OR MAY NOT BE ENCOUNTERED DURING THE CONSTRUCTION PROCESS.

12. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1".

13. THIS CULVERT WILL BE BUILT USING ACCELERATED CONSTRUCTION TECHNIQUES. SEE SPECIAL PROVISIONS FOR DETAILS.

14. NATURAL APPEARING MATERIALS (ROCK OR GRAVEL) SHOULD BE USED TO ENSURE THAT THIS PROJECT BLENDS WITH THE SURROUNDING ENVIRONMENT.

15. MATERIALS BROUGHT TO THE SITE SHOULD NOT BE VISIBLE FROM ROUTE 8 AND ALONG THE STREAM WHERE THE PUBLIC FISHES.

16. BECAUSE NON-NATIVE INVASIVE PLANT SPECIES CAN BE SPREAD TO THE NATIONAL FOREST BY EQUIPMENT BEARING SEEDS FROM OFF SITE, AND SPREAD FROM THE NATIONAL FOREST BY THAT SAME EQUIPMENT MOVING TO THE NEXT SITE, ALL GROUND DISTURBING EQUIPMENT SHALL BE CLEANED BOTH BEFORE IT IS MOVED ONTO AND AFTER IT IS MOVED OFF OF THE SITE.

17. A NATIVE PLANT SEED MIX WITH LOCALLY SUITABLE GENOTYPES SHOULD BE USED FOR ANY RESEEDING.

18. IN ADDITION, BIOLOGICALLY INERT MULCH SHOULD BE USED. MULCH MATERIAL THAT DOES NOT CONTAIN SEEDS INCLUDES ON SITE BRUSH TRIMMINGS AND A VARIETY OF TEXTILES INCLUDING COCONUT FIBER.

PRECAST CONCRETE BOX NOTES:

1. DESIGN CRITERIA:
   A. SOIL UNIT WEIGHT = 140 PCF
   B. DESIGN LIVE LOAD = AASHTO HS-25-44
   C. WINGWALL FOOTING PRESSURE <= 4 KSF
   D. FACTOR OF SAFETY FOR OVERTURNING >= 2.0
   E. FACTOR OF SAFETY FOR SLIDING >= 1.5

2. THE PRECAST SECTIONS ARE SHOWN FOR REFERENCES ONLY. THE ACTUAL DIMENSIONS AND SHAPE WILL BE DEPENDENT ON THE FABRICATOR. ALL UNITS EXCEPT FIRST AND LAST WILL BE SAME SHAPE AND SAME LENGTH. THE MINIMUM INSIDE DIMENSIONS SHALL BE 8'-0" HEIGHT AND 12'-0" WIDE. THE ENDS OF THE FIRST AND LAST UNITS SHALL BE VERTICAL.

3. BOTH HEADWALLS, WINGWALLS #1,#2,#3,#4, AND CUT OFF WALLS SHALL BE PRECAST, ALL CONNECTIONS SHALL BE DESIGNED AND SUBMITTED TO THE PROJECT MANAGER FOR APPROVAL.

4. THE BED RETENTION SILLS WILL BE 1'-0" FRONT TO BACK, 12'-0" LONG AND HAVE A 1:10 LATERAL SLOPE AS SHOWN IN PLANS. THEY WILL BE PRECAST CONCRETE PLACED AT THE FACTORY AS SHOWN ON THE PLANS AT ROUGHLY 16'-0" ON CENTER AND AT BOTH THE INLET AND THE OUTLET.

5. THE STRUCTURE WILL BE AT A 2.84% GRADE SIMULATING THAT OF THE STREAM.

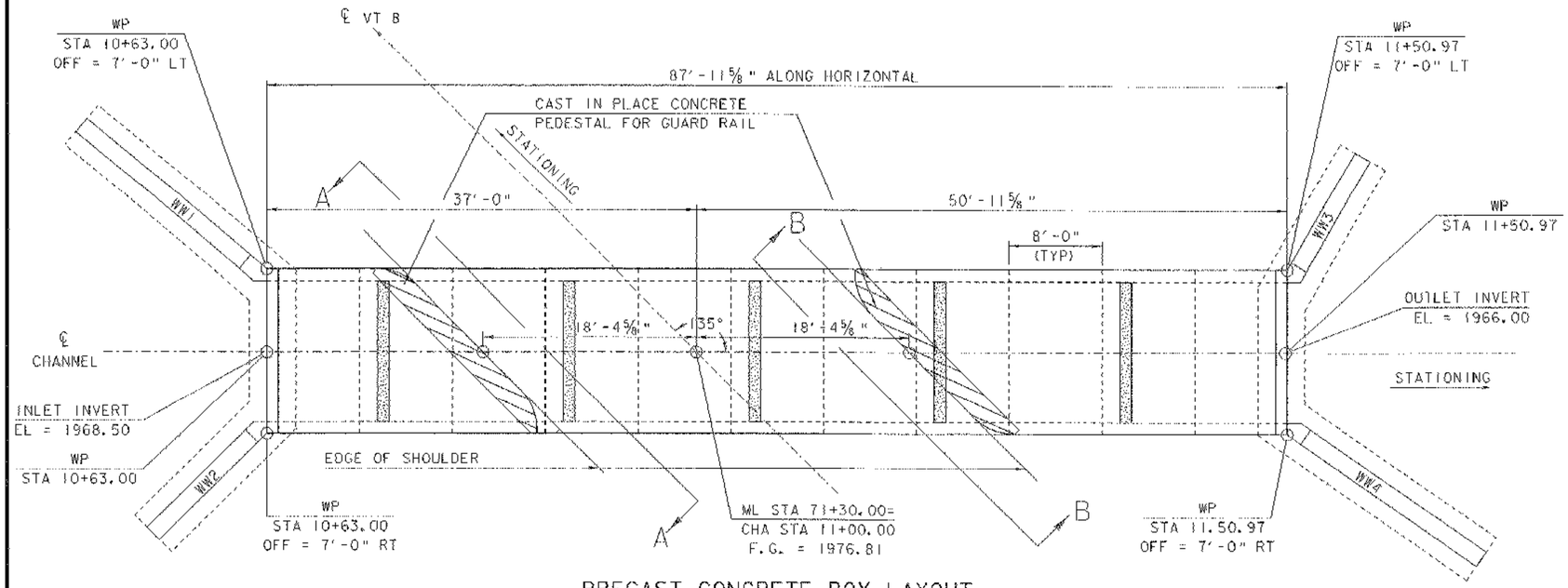
6. A CAST IN PLACE CONCRETE PEDESTAL SHALL BE PLACED AS SHOWN ON THE PLANS IN ORDER TO ATTACH THE GUARDRAIL OVER THE STRUCTURE.

7. THE MECHANICAL CONNECTORS AND #5 THREADED DOWELS SHOWN ON SHEET 17 SHALL BE PAID FOR UNDER ITEM 540.10 "PRECAST CONCRETE STRUCTURE". DESIGN AND PLACEMENT OF THESE MECHANICAL CONNECTORS SHALL MAINTAIN COVER REQUIREMENTS IN THE TAPERED SECTION OF THE CAST IN PLACE CONCRETE PEDESTAL.

8. THE EXTERIOR (TOP AND SIDES) OF ALL CONCRETE BOX JOINTS ALONG WITH ALL LIFTING HOLES SHALL BE FILLED WITH MORTAR TYPE IV AFTER BEING SET IN THEIR FINAL POSITION. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 540.10 "PRECAST CONCRETE STRUCTURE".

9. A TWO (2) FOOT WIDE STRIP OF MEMBRANE WATERPROOFING (MEETING THE REQUIREMENTS OF SECTION 519.20) SHALL BE APPLIED AT EACH BOX JOINT. THE MEMBRANE SHALL BE CENTERED ON THE JOINT AND COVER THE FULL HEIGHT OF THE SIDE JOINTS. THE TOP OF THE JOINTS SHALL THEN BE COVERED WITH THE TWO (2) FOOT STRIP OF MEMBRANE. THE SHEETS SHALL OVERLAP THE EDGES BY ONE (1) FOOT ON EACH SIDE. THE PAYMENT FOR MEMBRANE SHALL BE UNDER THE ITEM 519.20 "SHEET MEMBRANE WATERPROOFING (PREFORMED)".

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176typ.dgn	
IPARM FILE NAME: s04c176notes.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
GENERAL NOTES	SHEET: 14 OF 39

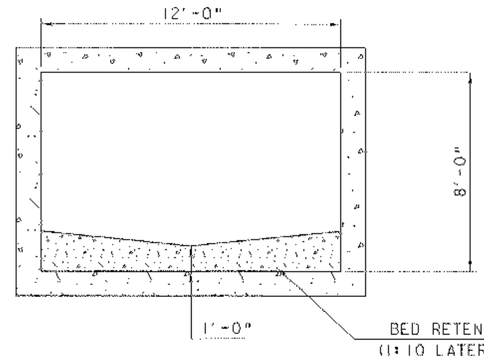


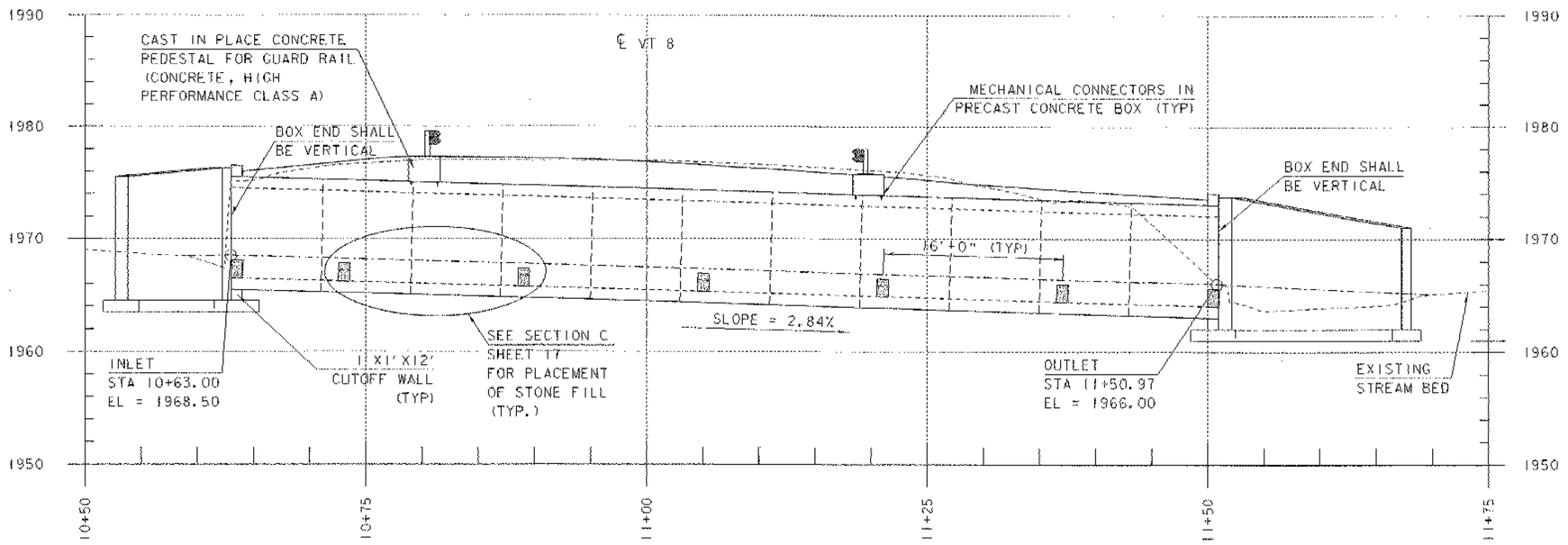
PRECAST CONCRETE BOX LAYOUT

SEE SHEET 18 FOR SECTIONS A & B

SCALE 1" = 6'-0"

SEE SHOP DRAWINGS FOR ACTUAL DIMENSIONS





PRECAST CONCRETE BOX ELEVATION VIEW

(PROFILE ALONG ℄ OF CHANNEL)

SCALE 1" = 6'-0"

PRECAST CONCRETE BOX CROSS SECTION

SEE SHEET 17 FOR STONE FILL DETAILS

SCALE 1" = 3'-0"

SCALE 1" = 3'-0"

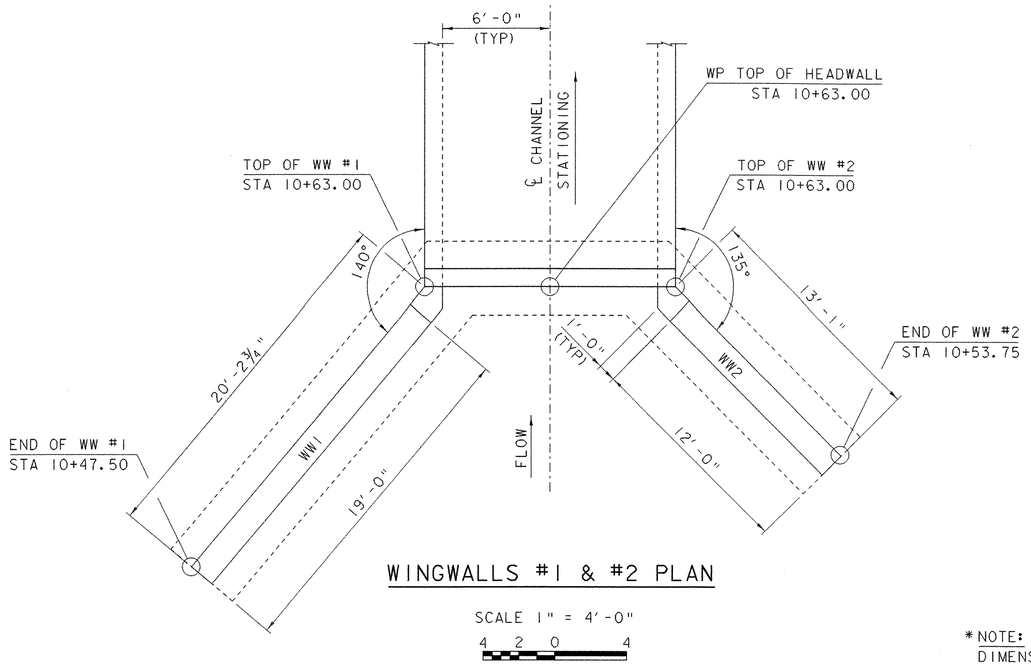
3 0 3

SCALE 1" = 6'-0"

6 3 0 6

NOTE:
BED RETENTION SILLS SHALL BE PLACED AT BOTH THE INLET AND OUTLET OF THE BOX AS SHOWN

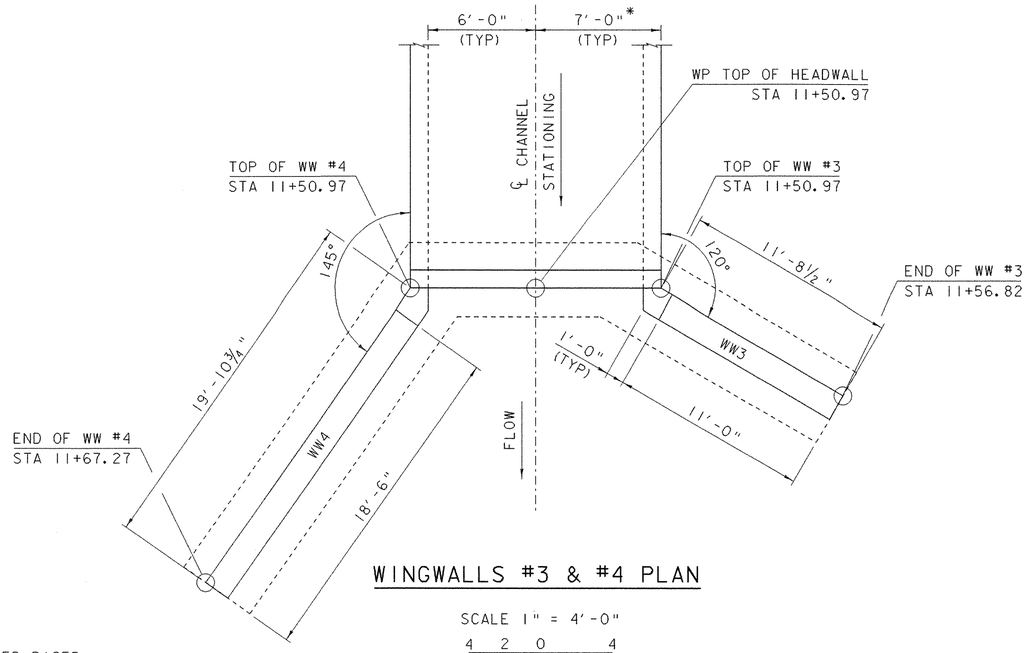
PROJECT: READSBORO	PROJECT NO.#: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176pipepro.dgn	
IPARM FILE NAME: s04c176pipepro.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CULVERT PLAN, ELEVATION & DETAILS	SHEET: 15 OF 39



WINGWALLS #1 & #2 PLAN

SCALE 1" = 4'-0"

4 2 0 4

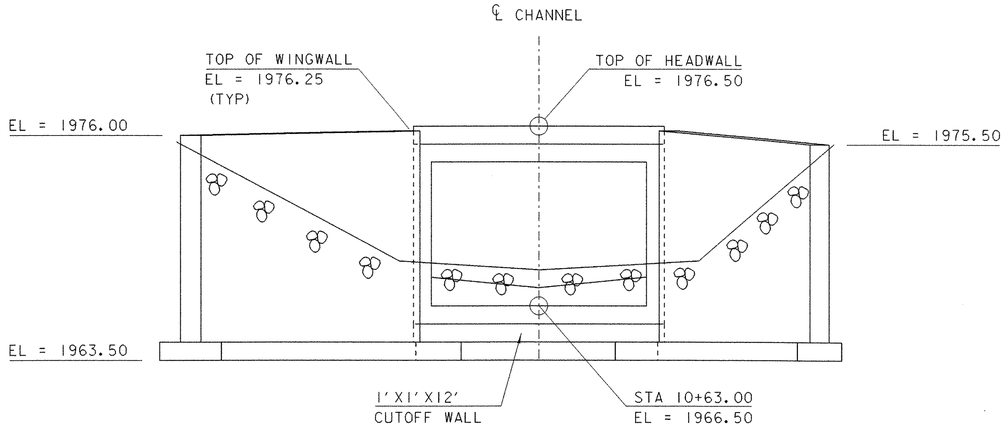


WINGWALLS #3 & #4 PLAN

SCALE 1" = 4'-0"

4 2 0 4

*NOTE:
DIMENSIONS SHOWN ARE MEASURED BASED ON AN ASSUMED BOX WALL THICKNESS OF 1'-0".

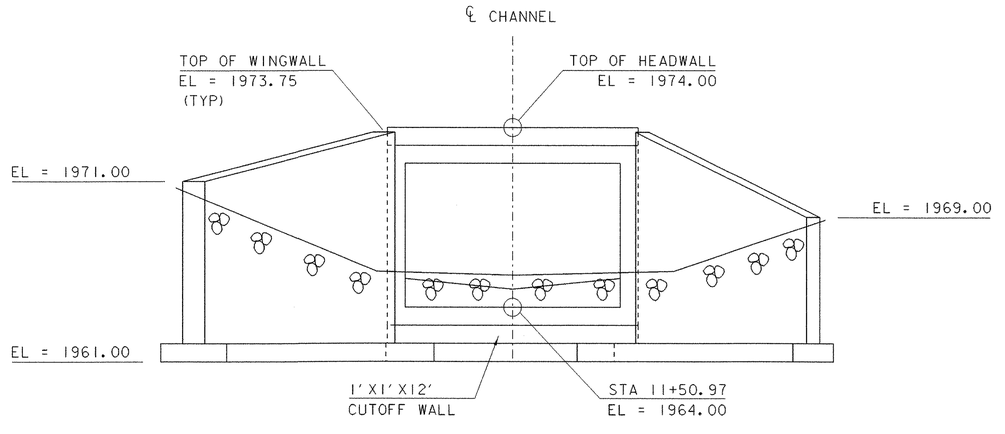


WINGWALLS #1 & #2 ELEVATION

(AT INLET)

SCALE 1" = 4'-0"

4 2 0 4



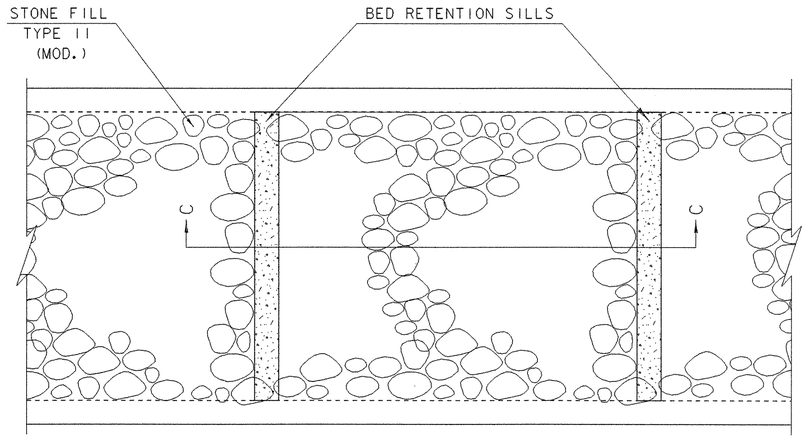
WINGWALLS #3 & #4 ELEVATION

(AT OUTLET)

SCALE 1" = 4'-0"

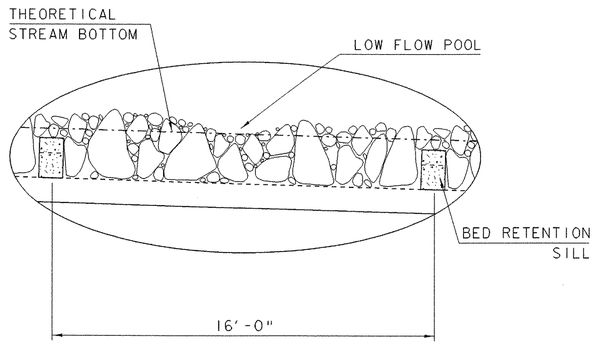
4 2 0 4

PROJECT: READSBORO	PROJECT NO.: ST CULV(4)
DESIGN FILE NAME: 04c176/structures/s04c176pipepro.dgn	
IPARM FILE NAME: s04c176ww.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
WINGWALL DETAILS	SHEET: 16 OF 39



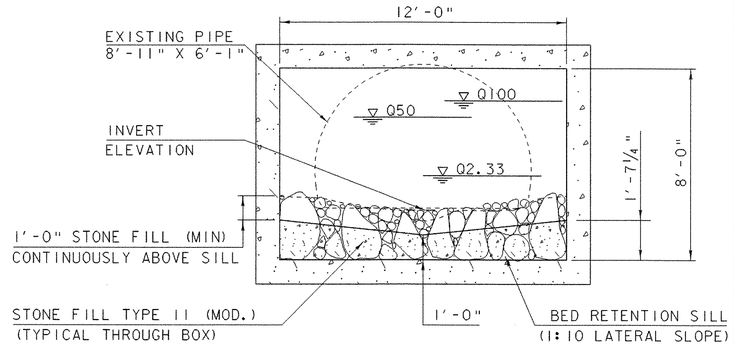
STONE FILL TPICAL LAYOUT

SCALE 1" = 3'-0"



SECTION C

SCALE 1" = 3'-0"



PRECAST CONCRETE BOX CROSS SECTION

SCALE 1" = 3'-0"

STONE FILL NOTES:

1. LARGE ROCKS (STONE FILL TYPE II (MOD.)) SHALL BE LOCATED IN ROCK BANDS PLACED IMMEDIATELY UPSTREAM OF THE BED RETENTION SILLS.

2. LARGE ROCKS (STONE FILL TYPE II (MOD.)) SHALL BE LOCATED THE LENGTH OF THE BOX ALONG BOTH WALLS.

3. STONE FILL SHALL BE INSTALLED AT 1:10 SLOPES TO BOX CENTERLINE AND TO A DEPTH OF ONE FOOT ABOVE THE CREST OF THE BED RETENTION SILLS.

4. STONE FILL OVER THE REMAINING BOX BED SHALL CONSIST OF TYPE II (MOD.) STONE WELL CHINKED WITH SMALLER STONE MATERIALS PROPORTIONATELY REPRESENTATIVE OF ALL PARTICLE SIZE CLASSES OF THE NATURAL STREAM BED LOCATED UPSTREAM OF THE PROJECT. THE LARGER STONE WILL BE WELL- CHINKED WITH FINE MATERIALS TO PREVENT SUBSURFACE FLOW. CHINK MATERIALS WILL BE POWER WASHED IN PLACE TO MAXIMIZE PENETRATION AND COMPACTION.

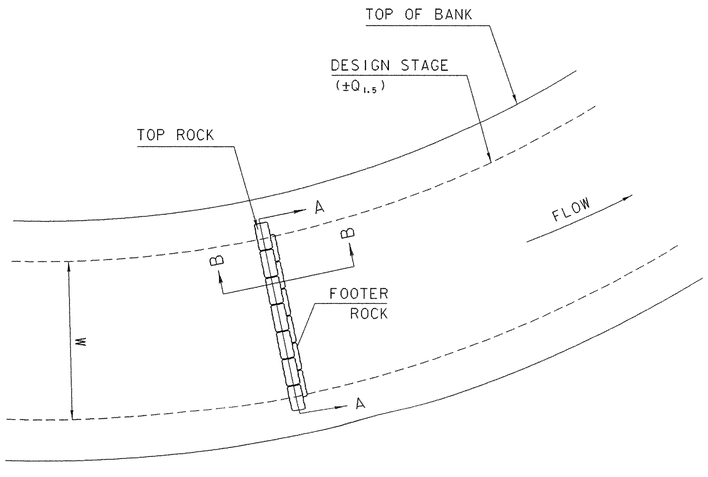
ROCK WEIR NOTES:

1. ASSURE COMPATIBILITY OF STRUCTURE WITH PLAN FORM LOCATION, ASSOCIATED BED FEATURES, AND CHANNEL LONGITUDINAL SLOPE.

2. ROCK MATERIAL SPECIFICATION:
   A. BLASTED OR QUARRIED, SOUND LEDGE.
   B. AT LEAST 2 DIMENSIONS >36"
      AND AT LEAST 1 DIMENSION >48"
   C. ROCK VANE TO BE WELL CHINKED

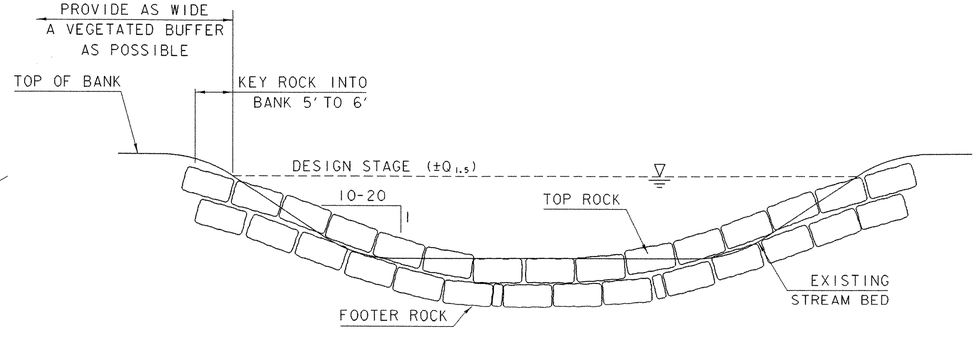
3. CHINK MATERIAL SPECIFICATION:
   A. 6"-12" COBBLE OR BLASTED ROCK

4. ROCK WEIRS AND THIER CONSTRUCTION SHALL BE PAID FOR UNDER ITEM 613.13: STONE FILL TYPE IV (MOD.)



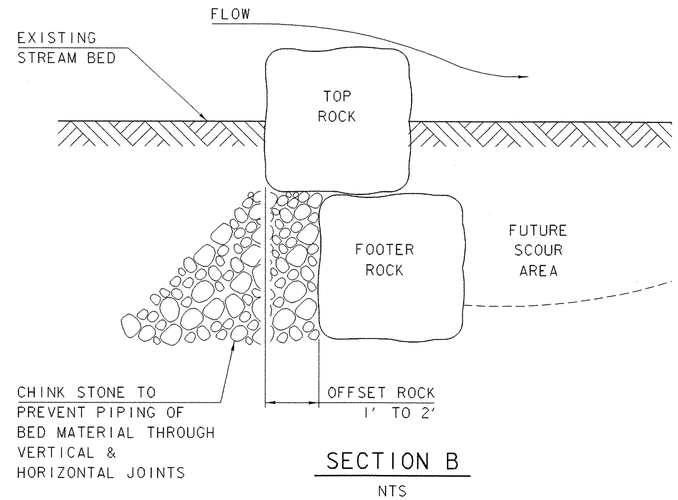
ROCK WEIR TYPICAL PLAN VIEW

NTS



SECTION A

NTS



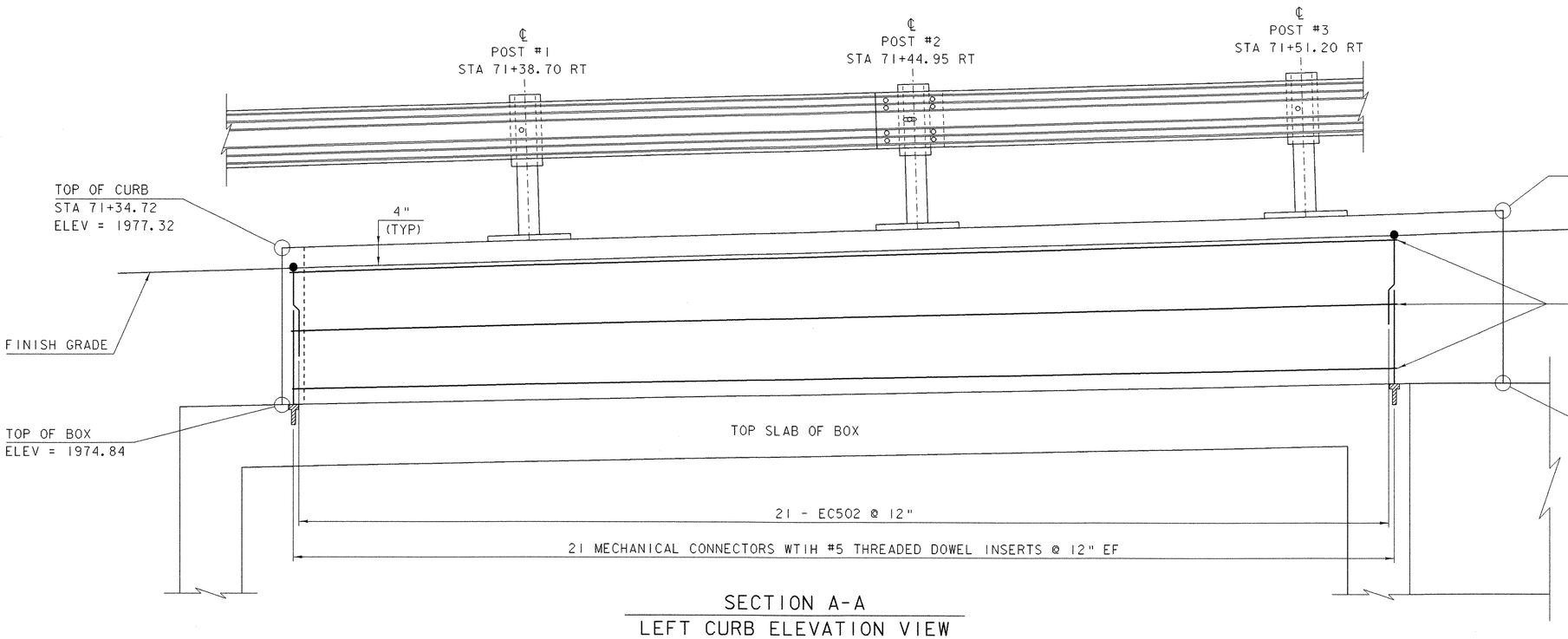
SECTION B

NTS

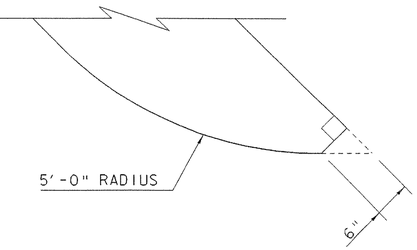
SCALE 1" = 3'-0"

3 0 3

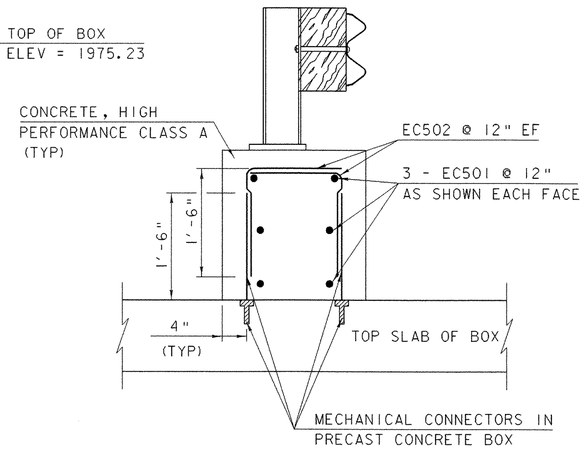
PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176pipepro.dgn	
IPARM FILE NAME: s04c176chanstone.	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL / STONE FILL DETAILS	SHEET: 17 OF 39



SECTION A-A
LEFT CURB ELEVATION VIEW
SCALE: 1" = 1'-0"

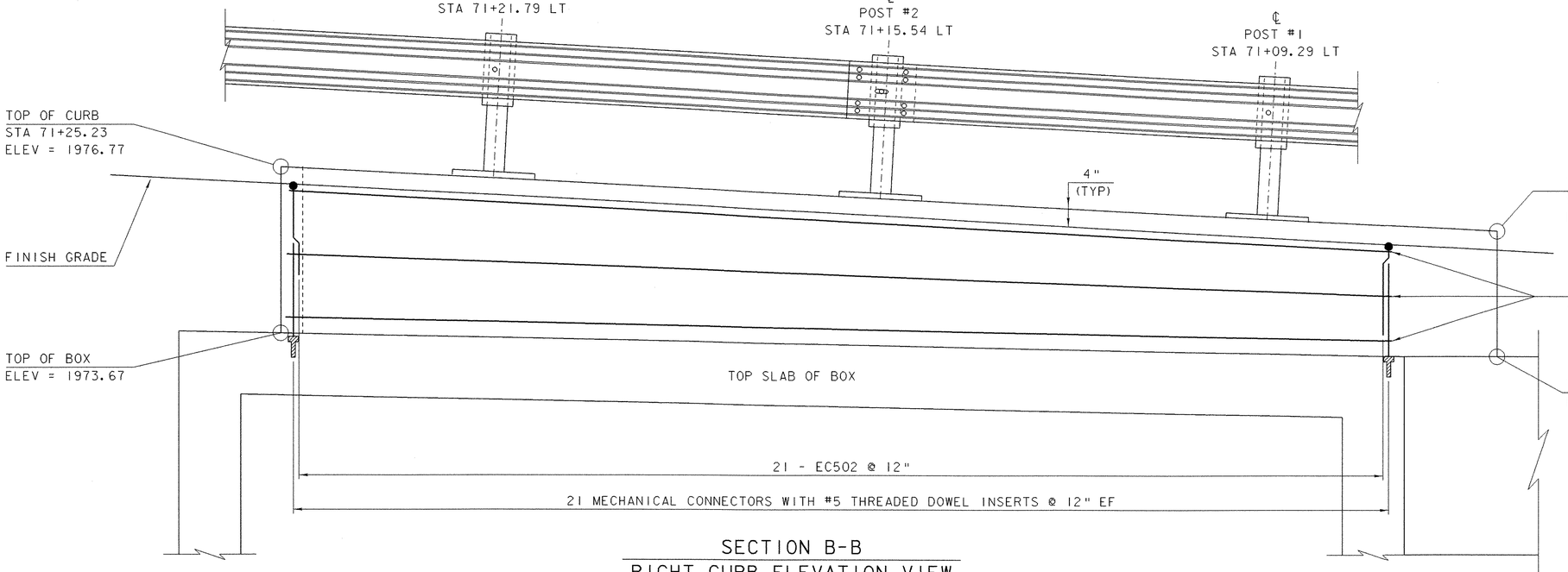


ACUTE CORNER DETAIL
NOT TO SCALE



MECHANICAL CONNECTORS IN PRECAST CONCRETE BOX WITH #5 THREADED DOWEL INCIDENTAL TO ITEM 540.10 "PRECAST CONCRETE STRUCTURE".

TYPICAL CURB SECTION
REINFORCING DETAIL
SCALE: 1" = 1'-0"



SECTION B-B
RIGHT CURB ELEVATION VIEW
SCALE: 1" = 1'-0"

SCALE 1" = 1'-0
1 9 6 3 0 1 2

PROJECT: READSBORO	PROJECT NO.: ST CULV(4)
DESIGN FILE NAME: 04c176/structures/s04c176pipepro.dgn	
IPARM FILE NAME: s04c176curbl.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CAST IN PLACE CURB DETAILS - 1	SHEET: 18 OF 39

NOTES

1. ALL WORK AND MATERIALS SHALL CONFORM TO THE PROVISIONS OF SECTION 525 - RAILINGS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
2. TUBING AND POSTS SHALL MEET THE REQUIREMENTS OF SECTION 732 - RAILING MATERIALS OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. ALL EXPOSED CUT OR SHEARED EDGES SHALL BE ROUNDED TO 1/16" RADIUS AND BE FREE OF BURRS.
4. RAIL POSTS SHALL BE SET NORMAL TO GRADE.
5. SECTIONS OF RAIL BAR SHALL BE ATTACHED TO A MINIMUM OF TWO (2) RAIL POSTS AND PREFERABLY TO FOUR (4) POSTS.
6. ALL PARTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH AASHTO M111, EXCEPT THAT HARDWARE SHALL MEET THE REQUIREMENTS OF AASHTO M232.
7. RAIL POSTS AND ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIL AND GIVEN AN ADDITIONAL 1/8 TURN.
8. RAIL BARS SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY AASHTO M164 (TYPE 1) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE BAR. HOLES IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.
9. HOLES IN RAILS FOR RAIL BAR ATTACHMENT MAY BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO ERECTION.
10. ANY BENDING OF THE RAIL SHALL BE BY SHOP PROCEDURE ONLY.
11. THE FABRICATOR SHALL SUBMIT SHOP DRAWINGS INCLUDING WELDING PROCEDURES TO THE STRUCTURES SECTION FOR APPROVAL IN ACCORDANCE WITH THE PROVISIONS OF 506.04, SHOP DRAWINGS. ALL WELDING SHALL CONFORM WITH SECTION 506.10.

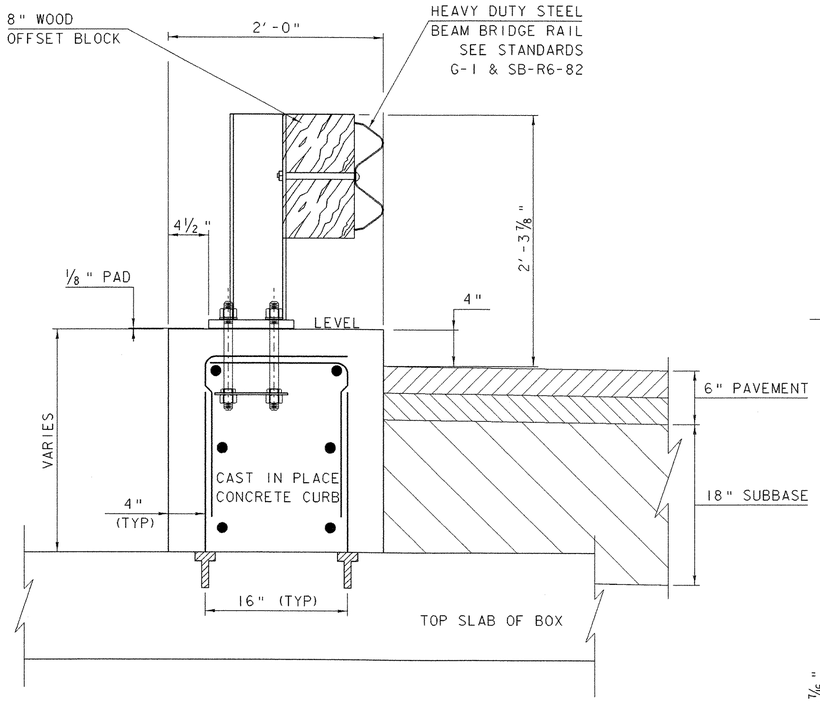
MATERIALS

RAIL BARS.....ASTM A500, GRADE B OR ASTM A501
RAIL POSTS.....ASTM A709/A709M, GRADE 50
ALL OTHER SHAPED & PLATES.....ASTM A709/A709M, GRADE 36
ANCHOR STUDS.....ASTM A449
ALL OTHER BOLTS (UNLESS NOTED).....ASTM A307

NUTS FOR AASHTO M164 BOLTS SHALL COMPLY WITH AASHTO M291. NUTS FOR ANCHOR STUDS SHALL COMPLY WITH ASTM A563.

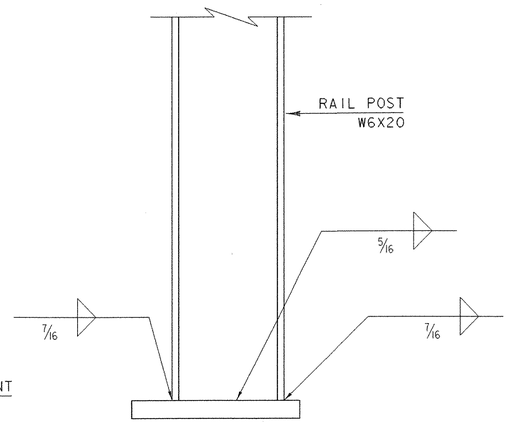
WASHERS SHALL COMPLY WITH AASHTO M293 (ASTM F436) SPECIFICATION.

1/8" PAD SHALL COMPLY WITH STANDARD SPECIFICATION SUBSECTION 731.01 OR 731.02.



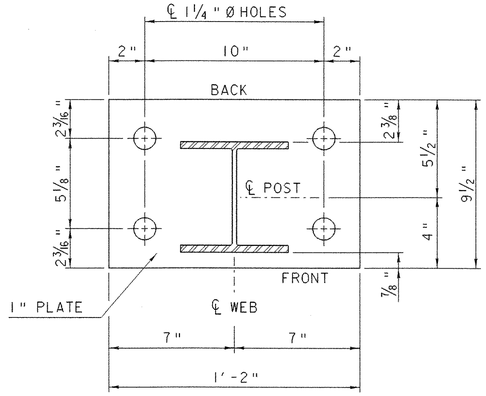
TYPICAL CURB SECTION

SCALE: 1 1/2" = 1'-0"



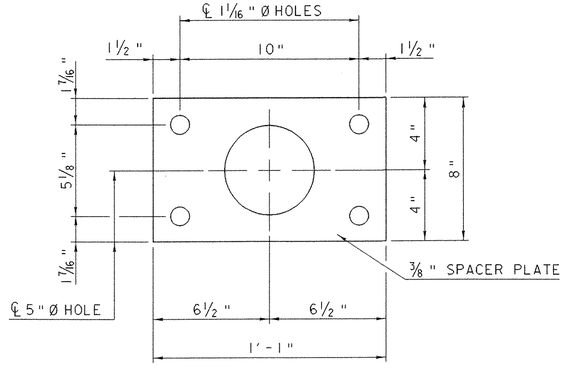
BASE WELD DETAIL

SCALE: 3" = 1'-0"



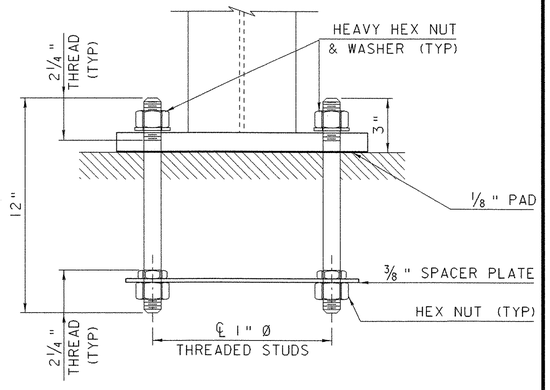
POST AND BASE PLATE

SCALE: 3" = 1'-0"



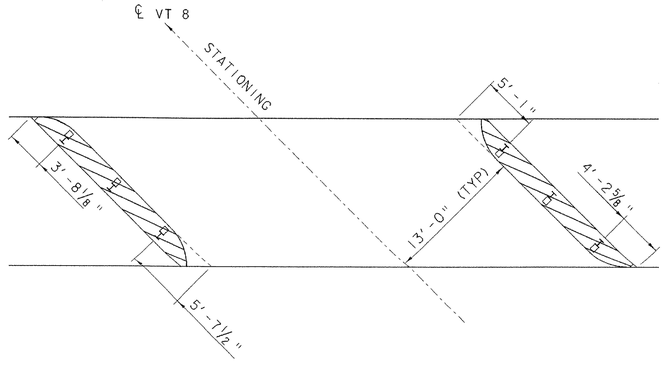
SPACER PLATE

SCALE: 3" = 1'-0"



RAIL POST ANCHORAGE

SCALE: 3" = 1'-0"



PLAN VIEW OF CAST IN PLACE PEDESTAL

NOT TO SCALE

SCALE 1 1/2" = 1'-0

1 9 6 3 0 1

SCALE 3" = 1'-0

1 9 6 3 0 1

PROJECT: READSBORO	PROJECT NO.: ST CULV(4)
DESIGN FILE NAME: 04c176/structures/s04c176pipepro.dgn	
IPARM FILE NAME: s04c176curb2.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CAST IN PLACE CURB DETAILS - 2	SHEET: 19 OF 39

STATE OF VERMONT
AGENCY OF TRANSPORTATION

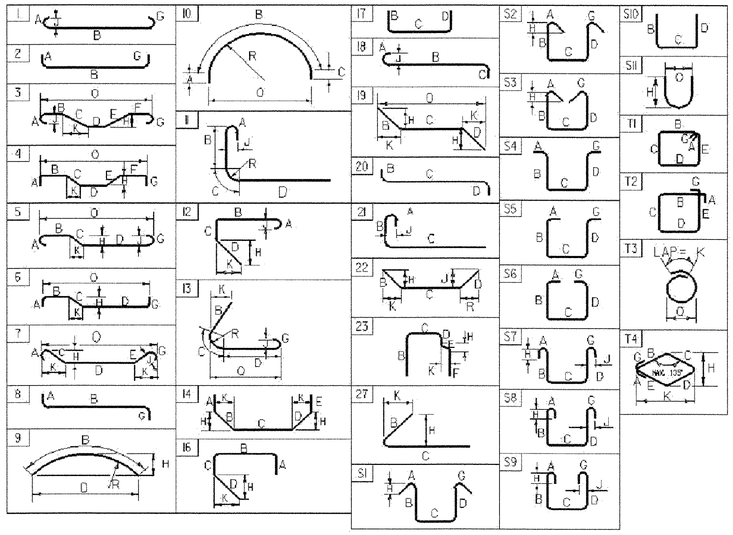
REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
CAST IN PLACE CONCRETE CURB																	
△	14	5	19'- 3"	EC501	STR	19'- 3"											
	84	5	2'- 10"	EC502	17		1'- 6"	1'- 4"	---								

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O

~ NOTES ~

1. UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
2. FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES ^{2}	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

PROJECT NAME: READSBORO
PROJECT NUMBER: ST CULV(4)

FILE NAME: s04c176rss.xls
PROJECT MANAGER: C.P.WILLIAMS
DESIGNED BY: E.L.RUSTAY
REINFORCING STEEL SCHEDULE SHEET #1

PLOT DATE: 1/12/2006
DRAWN BY: E.L.RUSTAY
CHECKED BY: J.M.FESSEL
SHEET 20 OF 39

REMOVAL AND DISPOSAL OF EXISTING GUARDRAIL
STA 71+27.00 LT - 72+75.00 LT
STA 70+25.00 RT - 71+52.00 RT

HEAVY DUTY STEEL BEAM GUARDRAIL
STA 71+21.00 LT - 71+32.45 LT
STA 71+57.45 LT - 72+25.00 LT
STA 70+25.00 RT - 71+03.04 RT
STA 71+28.04 RT - 71+56.00 RT

HEAVY DUTY STEEL BEAM GUARDRAIL
(MOD. PEDESTAL MOUNTED)
STA 71+32.45 LT - 71+57.45 LT
STA 71+03.04 RT - 71+28.04 RT

ANCHOR FOR STEEL BEAM GUARDRAIL
STA 71+27.00 LT
STA 70+32.00 RT
STA 71+34.00 RT

CONSTRUCT DRIVE
STA 71+67.00 RT (5' PAVED APRON)

REMOVE TRAFFIC SIGNS
STA 70+94.96 RT
STA 71+74.10 LT

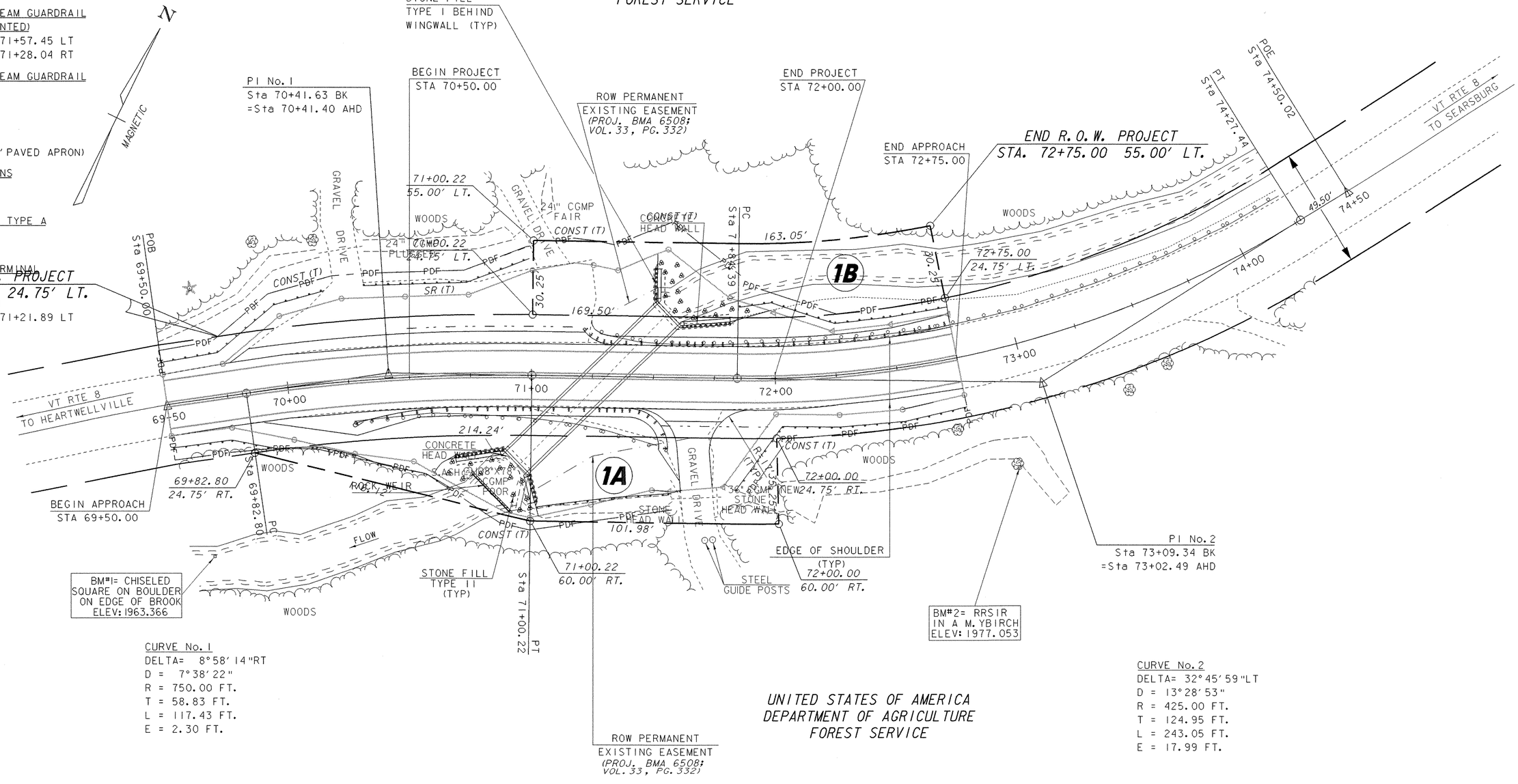
NEW TRAFFIC SIGNS, TYPE A
STA 70+90.00 RT
STA 71+75.00 LT

BREAKAWAY CABLE TERMINAL
STA 69+25.00 RT
CONSTRUCT 5' APRON
STA 69+77.94 LT - 71+21.89 LT

DURABLE 4" WHITE LINE
STA 69+50.00 LT - 72+75.00 LT
STA 69+50.00 RT - 72+75.00 RT

DURABLE 4" YELLOW LINE (DOUBLE)
STA 69+50.00 - 72+75.00

UNITED STATES OF AMERICA
DEPARTMENT OF AGRICULTURE
FOREST SERVICE



CURVE No. 1
DELTA= 8°58'14"RT
D = 7°38'22"
R = 750.00 FT.
T = 58.83 FT.
L = 117.43 FT.
E = 2.30 FT.

CURVE No. 2
DELTA= 32°45'59"LT
D = 13°28'53"
R = 425.00 FT.
T = 124.95 FT.
L = 243.05 FT.
E = 17.99 FT.

UNITED STATES OF AMERICA
DEPARTMENT OF AGRICULTURE
FOREST SERVICE

ROW PERMANENT
EXISTING EASEMENT
(PROJ. BMA 6508; VOL. 33, PG. 332)

LAYOUT
SCALE 1" = 20'-0
20 0 20

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176bdr.dgn	
IPARM FILE NAME: s04c176lay.i	PLOT DATE: 18-JUL-2006
SURVEYED BY: L.G.ORVIS	SURVEY DATE: 11/2004
SQUAD LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
ROW SHEET 9 OF 9	SHEET 21 OF 39

STATE OF VERMONT
AGENCY OF TRANSPORTATION

RIGHT - OF - WAY DETAIL SHEET

TABLE OF PROPERTY ACQUISITION

PARCEL NO.	PROPERTY OWNER	SHEET NO.	BEGINNING STATION	ENDING STATION	TAKE	REMAINDER	RIGHT			RECORDING DATA					REMARKS
					AREA±	AREA±	TYPE	(T)/(P)	AREA ±	TITLE	DATE	TOWN / CITY	BOOK	PAGE	
1A	UNITED STATES OF AMERICA	9	69+82.80 RT.	72+00.00 RT.	0.13 A							READSBORO			5,660 SF±; INCLUDES PREVIOUSLY
	DEPARTMENT OF AGRICULTURE														ACQUIRED EASEMENT
	FOREST SERVICE		70+77.0 RT.	71+23.5 RT.			CONST.	(T)	110 SF±						INCLUDES PDF
			72+00.0 RT.	72+09.6 RT.			CONST.	(T)	16 SF±						INCLUDES PDF
1B		9	71+00.22 LT.	72+75.00 LT.	0.12A										5,050 SF±; INCLUDES PREVIOUSLY
															ACQUIRED EASEMENT
			69+74.5 LT.	71+00.22 LT.			CONST.	(T)	1,280 SF±						INCLUDES PDF & EROSION CONTROL
			69+93.2 LT.	71+00.22 LT.			SLOPE	(T)	970 SF±						
			71+10.6 LT.	71+26.5 LT.			CONST.	(T)	12 SF±						INCLUDES PDF
			71+36.8 LT.	71+68.3 LT.			CONST.	(T)	130 SF±						INCLUDES PDF

TABLE OF REVISIONS

REVISION NO.	SHEET NO.	DESCRIPTION	DATE
		ELECTRONIC FILES TO STRUCTURES	07/06/06

PLOT DATE 07/06/06

PLAN LEGEND

- EXISTING RIGHT-OF-WAY
- TAKING WITH ACCESS
- TAKING WITHOUT ACCESS
- CZ — CLEAR ZONE
- P / L — PROPERTY LINE
- TOE OF SLOPE
- TOP OF CUT
- SR (P) — SLOPE RIGHT
- CONST. (T) — CONSTRUCTION RIGHT
- PDF ——— PDF — PROJECT DEMARCATION FENCE

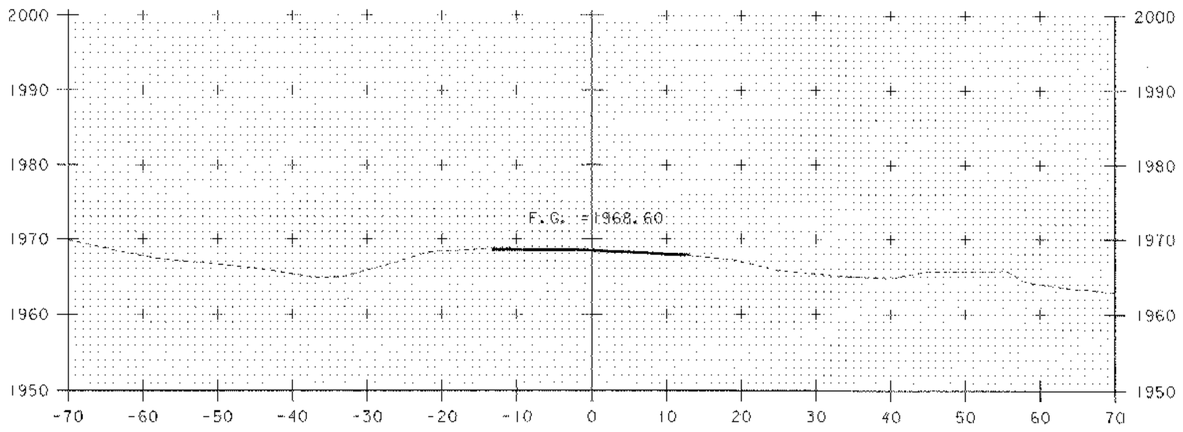
EC	-EROSION CONTROL
(P)	-PERMANENT
(T)	-TEMPORARY
DR.	-DRAINAGE RIGHT
DIT.	-DITCHING RIGHT
CH.	-CHANNEL RIGHT
DRIVE	-DRIVE RIGHT
CUL.	-CULVERT RIGHT
C&T	-CLEARING & TRIMMING RIGHT
SR	-SLOPE RIGHT
UE	-UTILITY EASEMENT

APPROVED: ROGER P. DUMAS DATE: 11-22-05
CHIEF, PLANS & TITLES

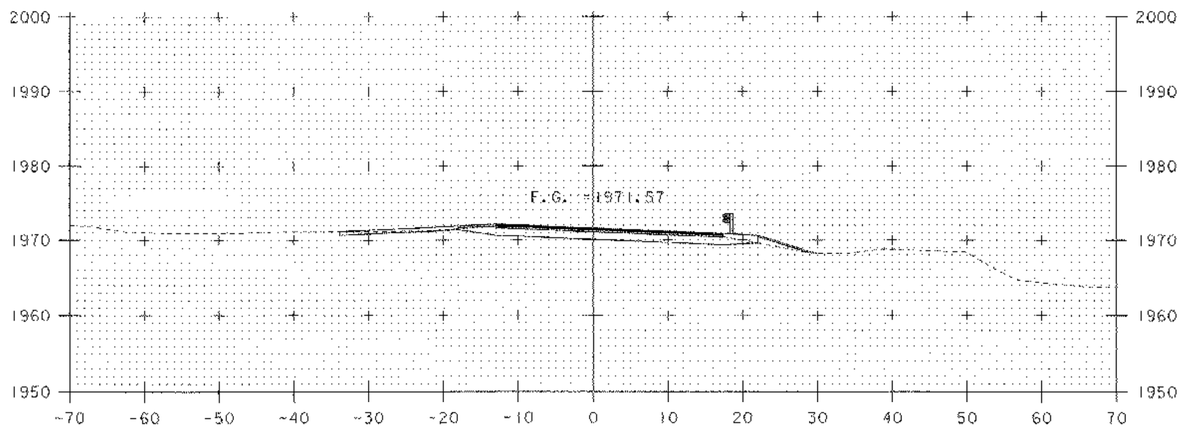
PROJECT NAME: READSBORO
PROJECT NUMBER: ST CULV (4)

FILE NAME: 04C176
PROJECT LEADER: C. WILLIAMS
DESIGNED BY: 0
R.O.W. SHEET 8 OF 9

PLOT DATE: Date
DRAWN BY: MR
CHECKED BY: EP
SHEET 22 OF 39



69+75



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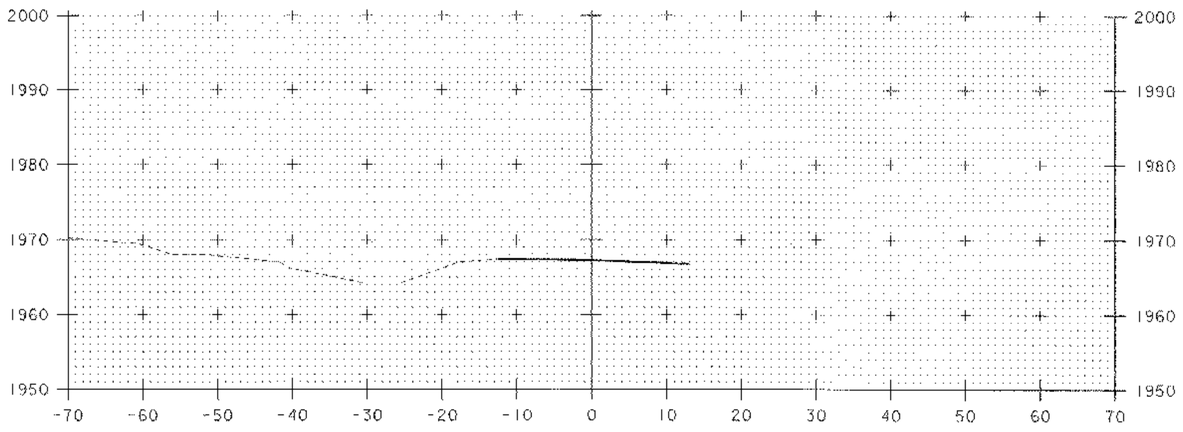
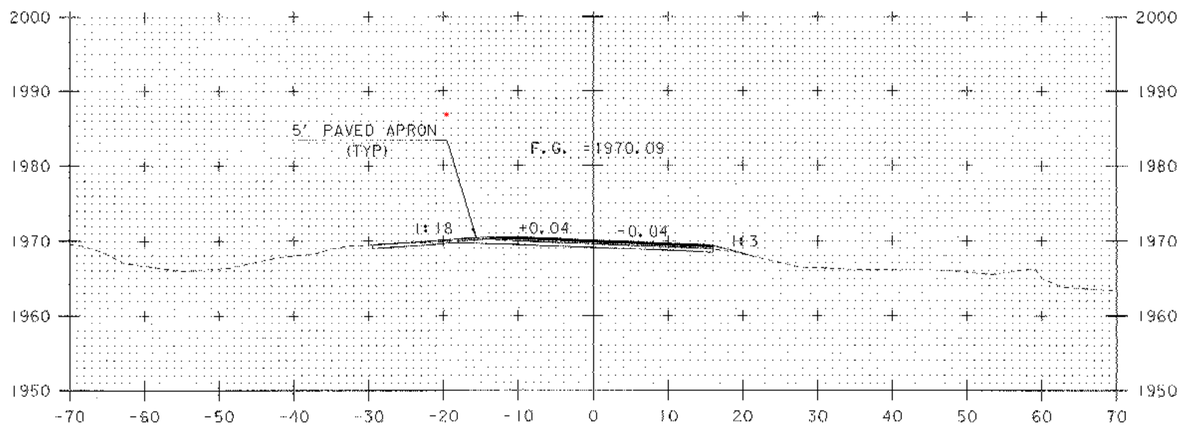


69+50

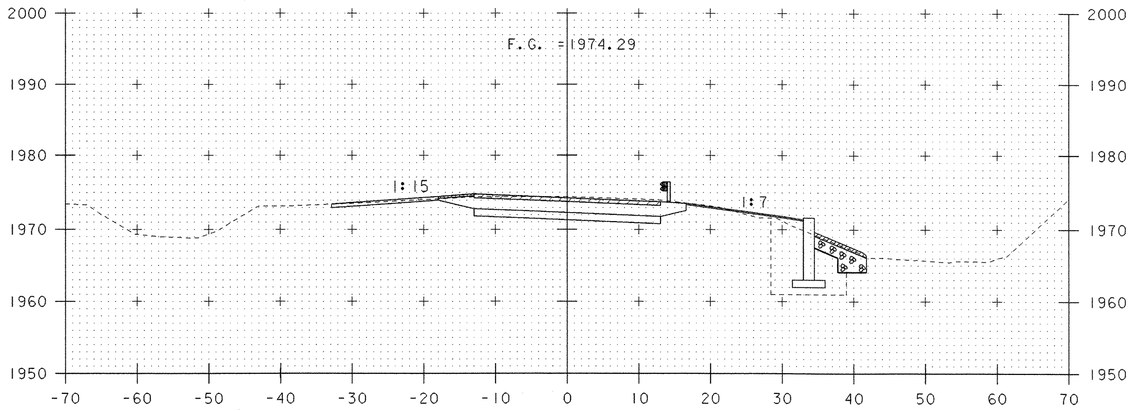
BEGIN APPROACH



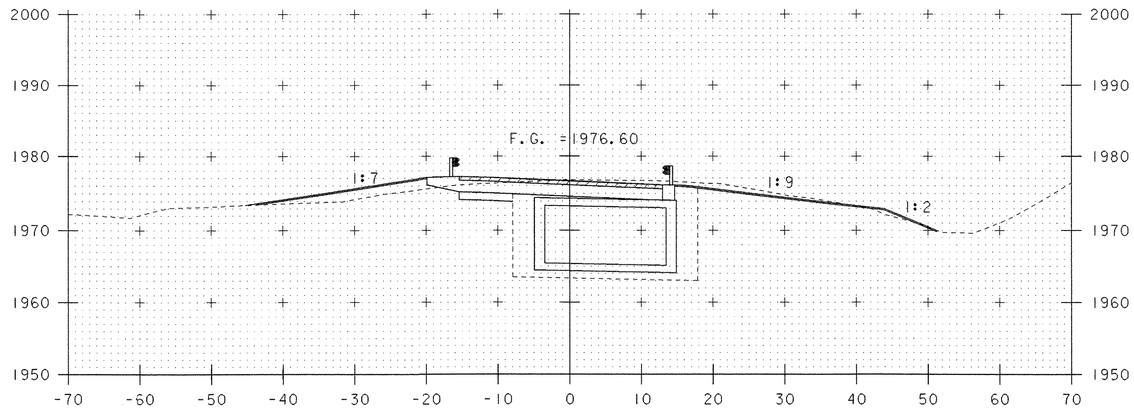
70+00

SCALE 1" = 10'-0

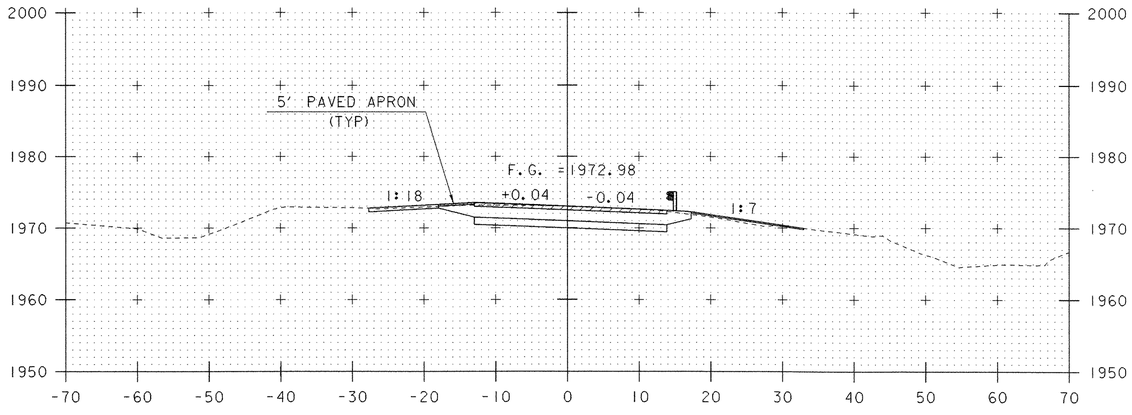
PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176xs.dgn	
IPARM FILE NAME: s04c176mll.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
ML STA. 69+50 TO STA. 70+25	SHEET: 23 OF 39



70+75



71+25



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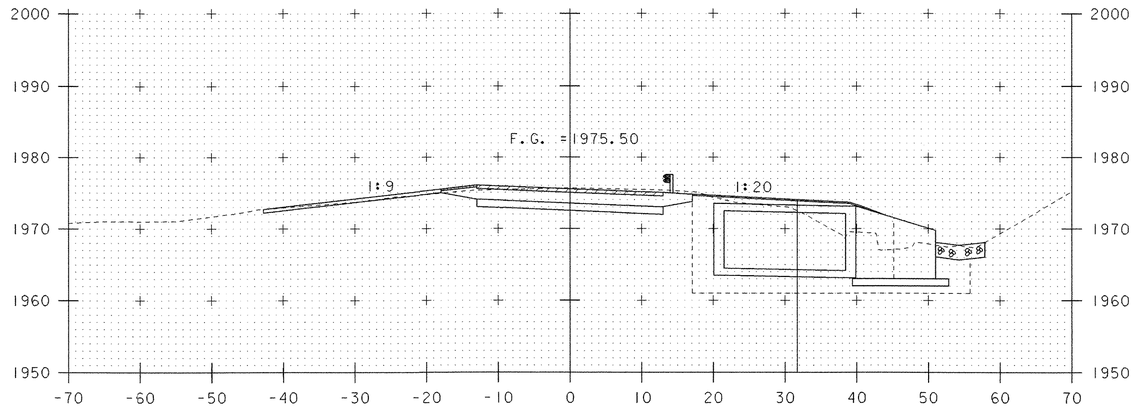
BEGIN PROJECT

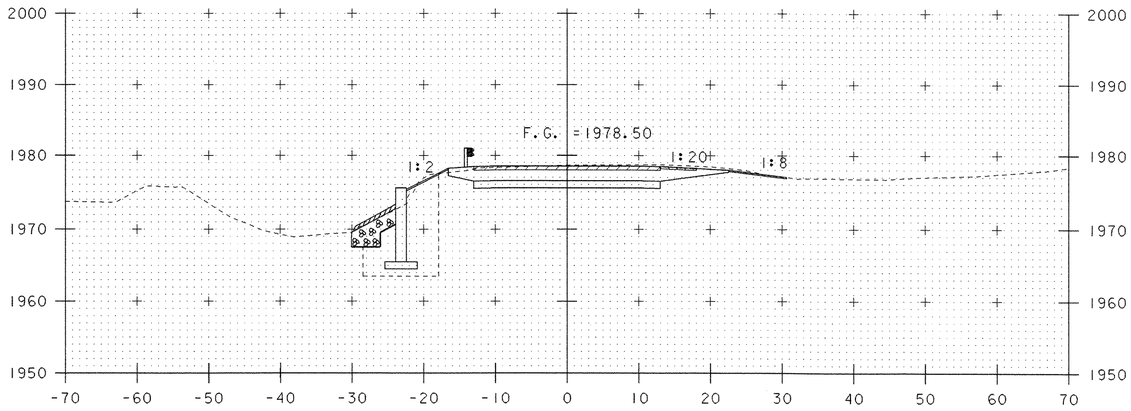


71+00

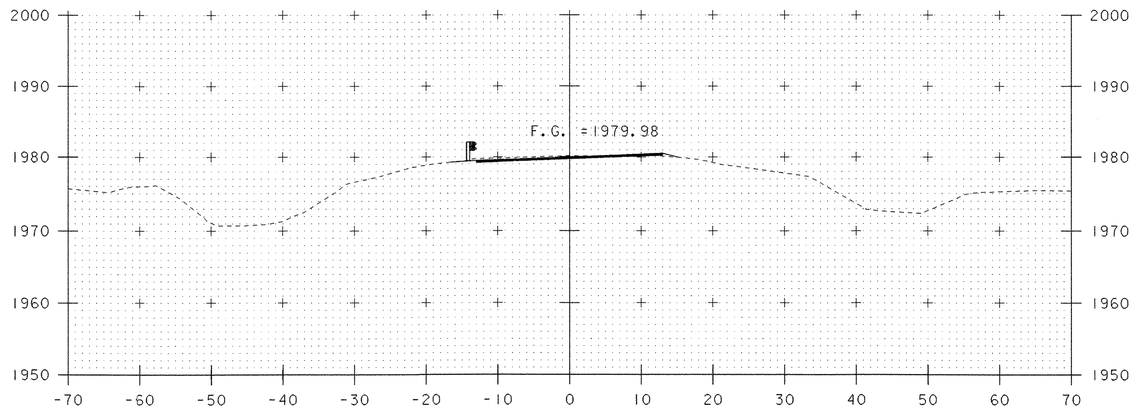
STA 70+93.79 RT
OUTLET INVERT ELEV = 1966.000

SCALE 1" = 10'-0
10 0 10

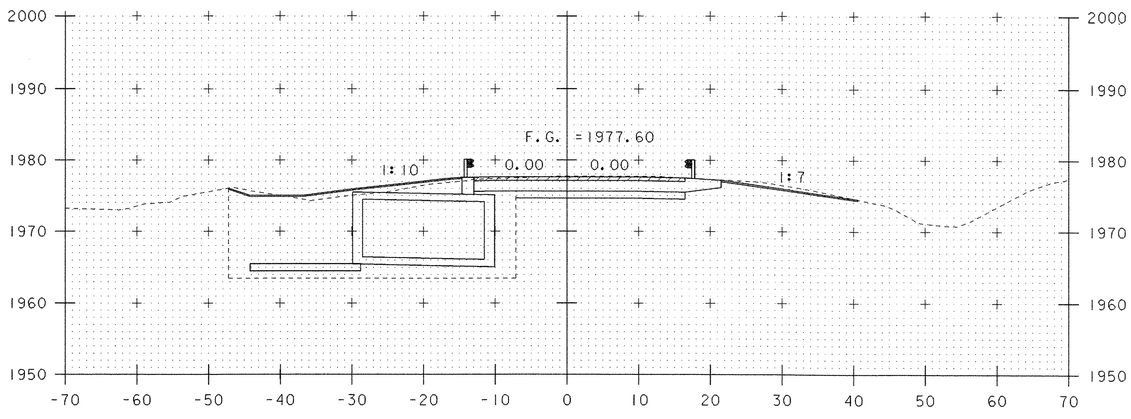
PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176xs.dgn	
IPARM FILE NAME: s04c176m12.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
ML STA. 70+50 TO STA. 71+25	SHEET: 24 OF 39



71+75

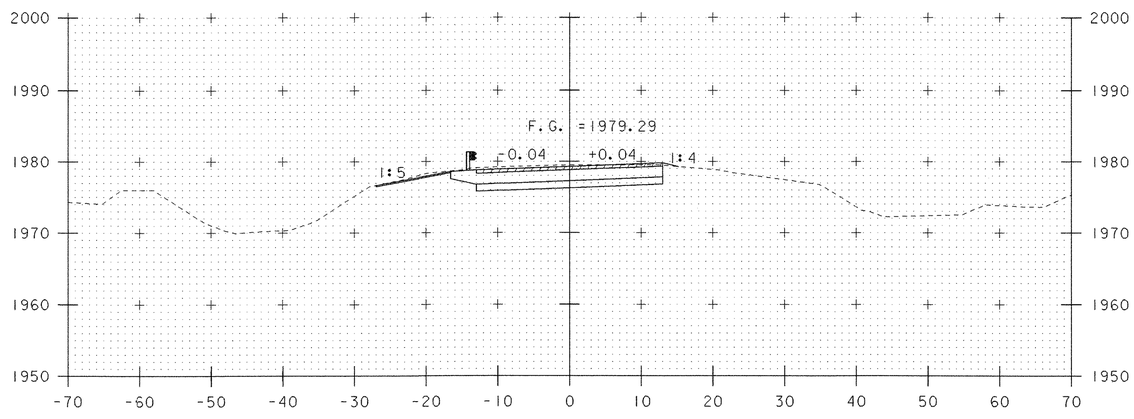


72+25



71+50

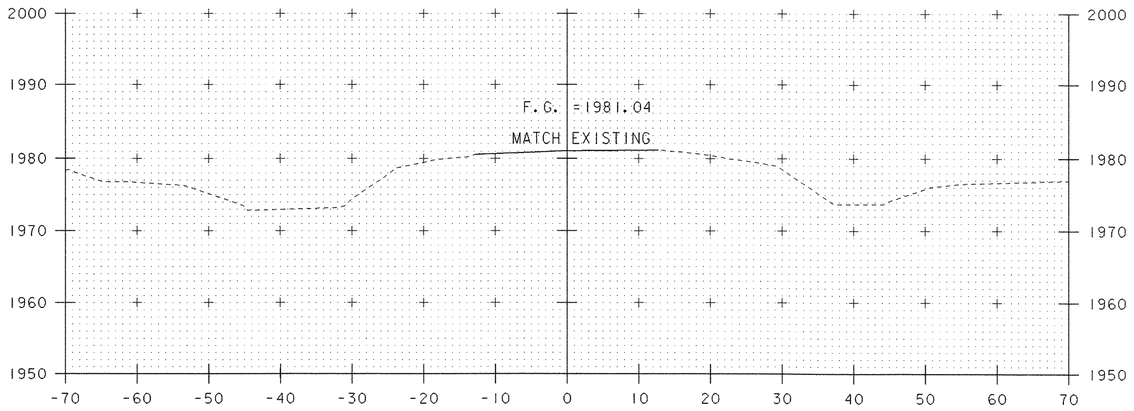
STA 71+56.16 LT
INLET INVERT ELEV = 1968.500



72+00
END PROJECT

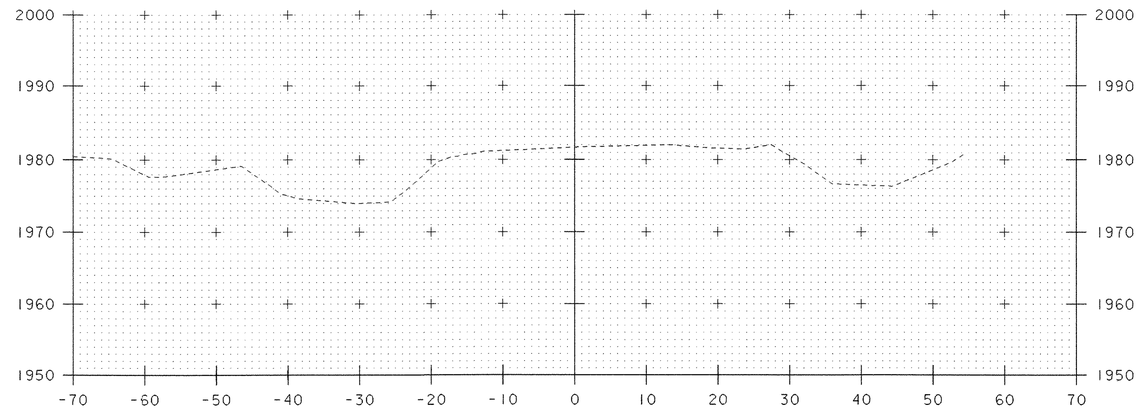
SCALE 1" = 10'-0
10 0 10

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176xs.dgn	
IPARM FILE NAME: s04c176m13.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: E.L.RUSTAY
ML STA. 71+50 TO STA. 72+25	SHEET: 25 OF 39

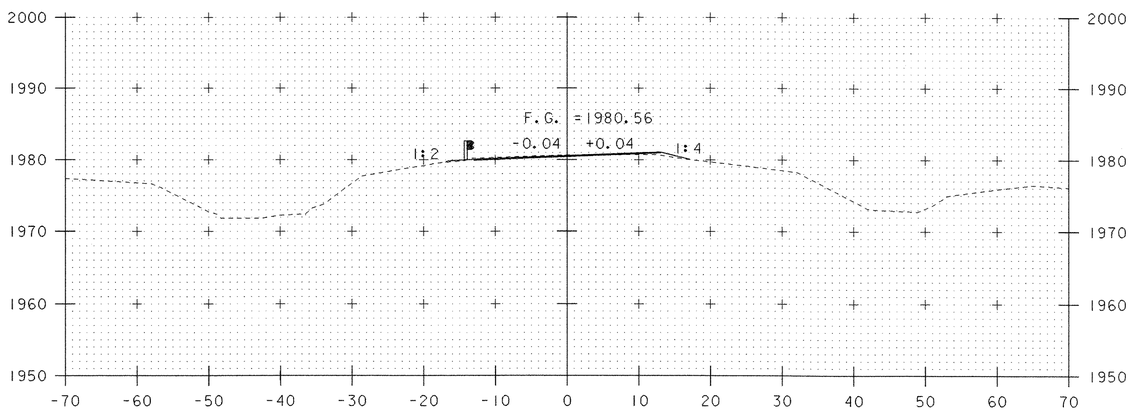


72+75

END APPROACH



73+25



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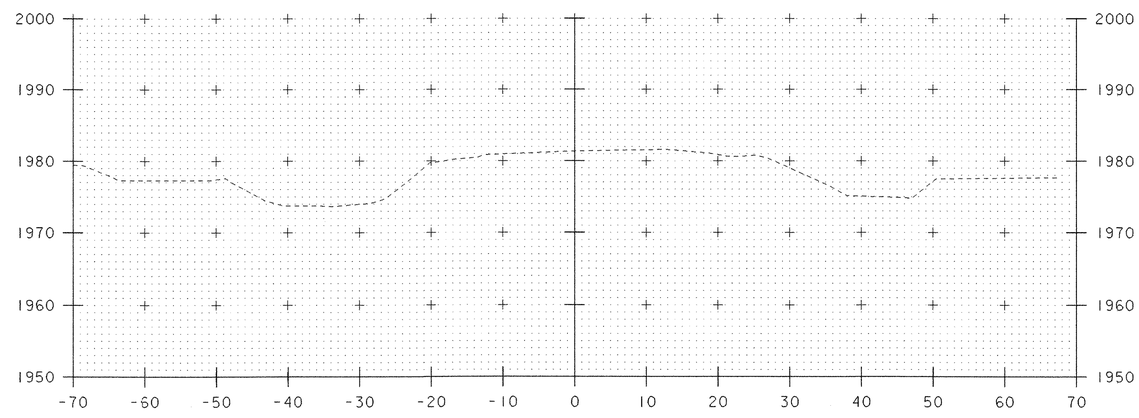
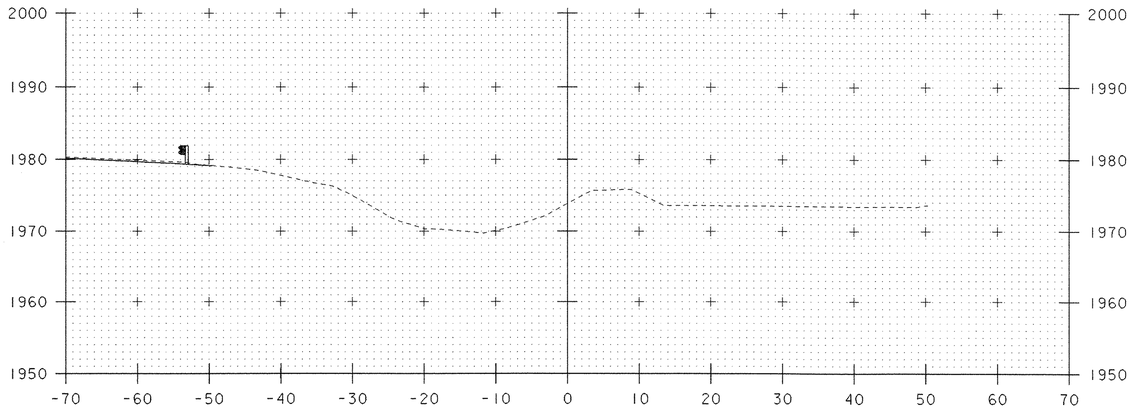


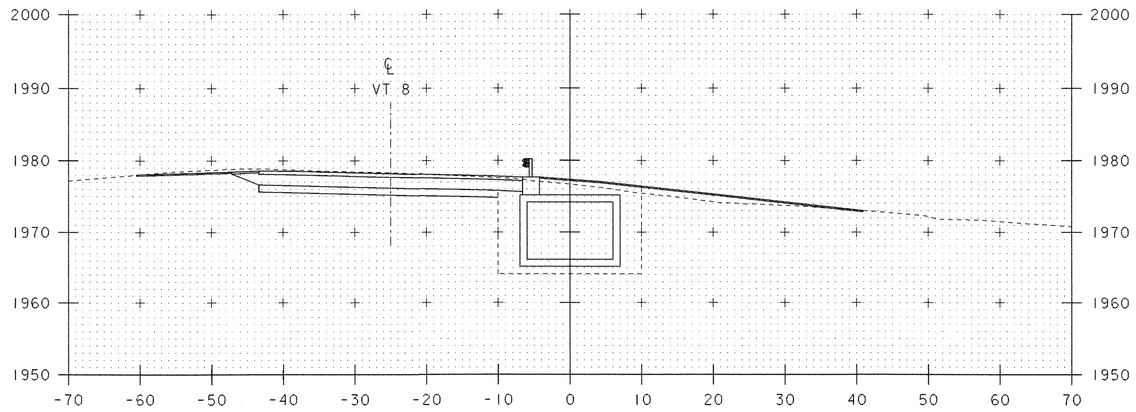
73+00

SCALE 1" = 10'-0
10 0 10

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176xs.dgn	
IPARM FILE NAME: s04c176m14.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
ML STA. 72+50 TO STA. 73+25	SHEET: 26 OF 39



10+25



10+75

STA 10+63.00 RT & LT
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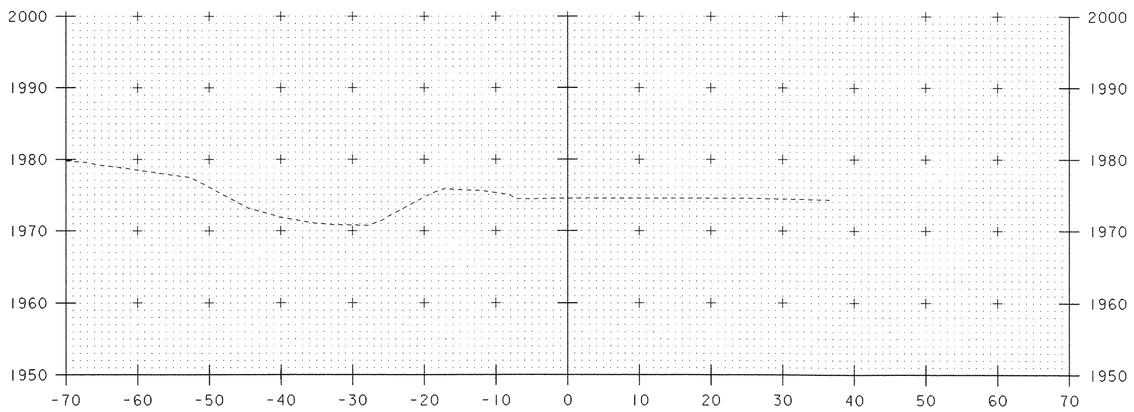
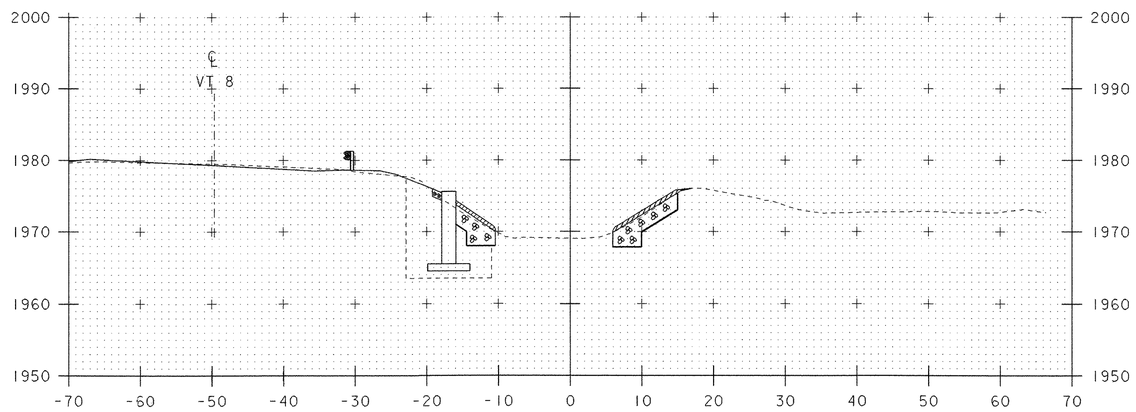
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL



10+00



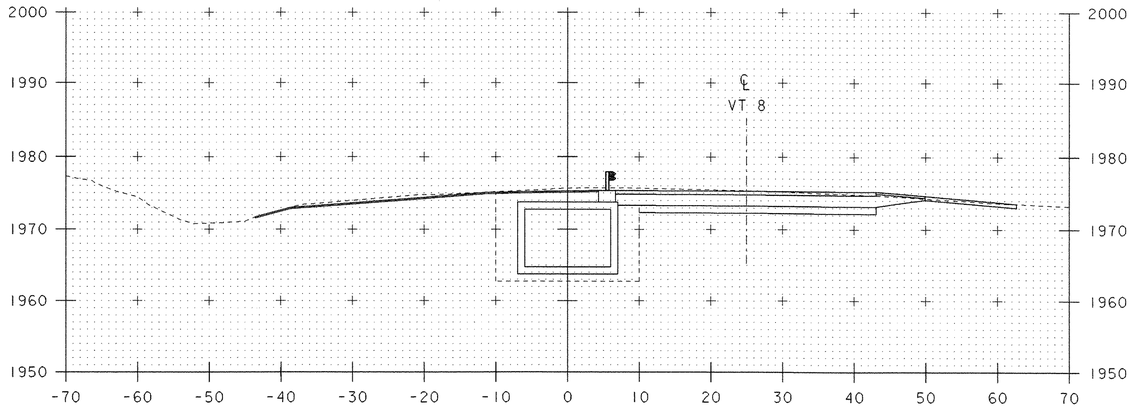
10+50

STA 10+32.00 LT
BEGIN STONE FILL TYPE II
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

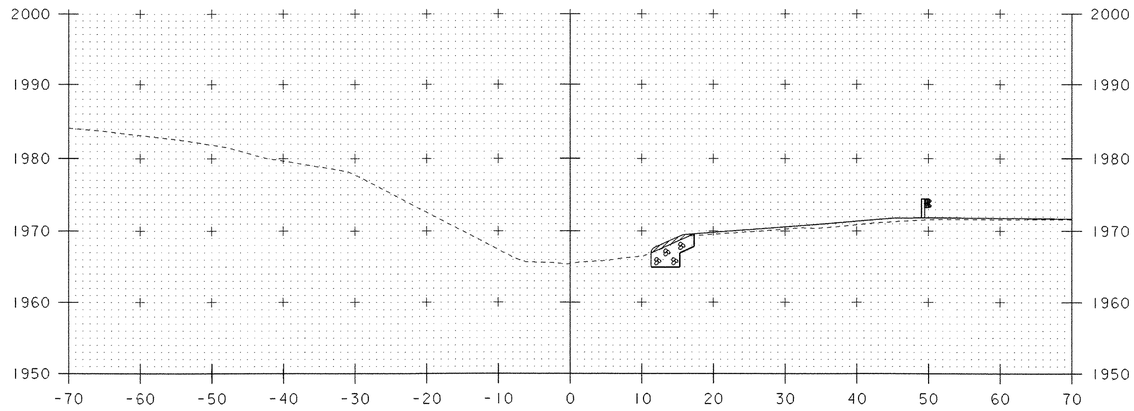
STA 10+50.00 RT
BEGIN STONE FILL TYPE II
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

SCALE 1" = 10'-0
10 0 10

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176xs.dgn	
IPARM FILE NAME: s04c176chl.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA. 10+00 TO STA. 10+75	SHEET: 27 OF 39



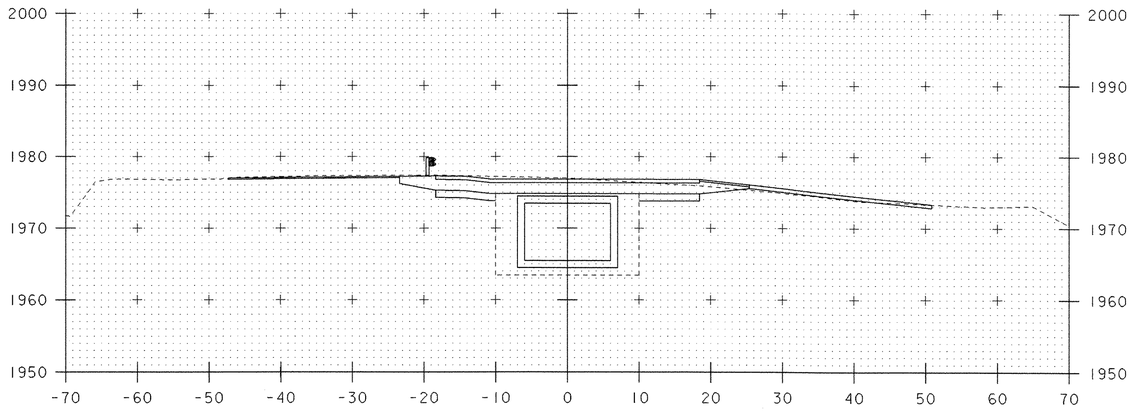
11+25



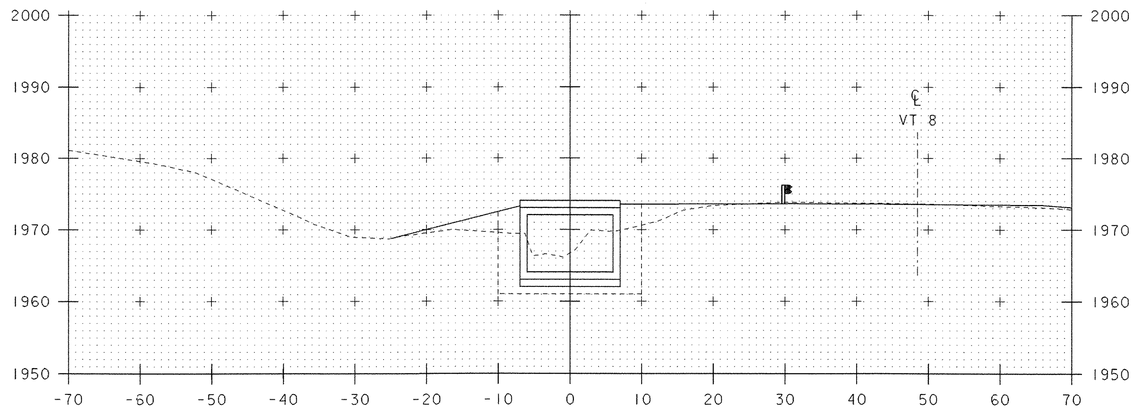
11+75

STA 11+66.00 LT
END STONE FILL TYPE II
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION

STA 11+78.00 RT
END STONE FILL TYPE II
END GEOTEXTILE UNDER STONE FILL
END GRUBBING MATERIAL
END UNCLASSIFIED CHANNEL EXCAVATION



11+00



11+50

STA 11+50.97 LT & RT
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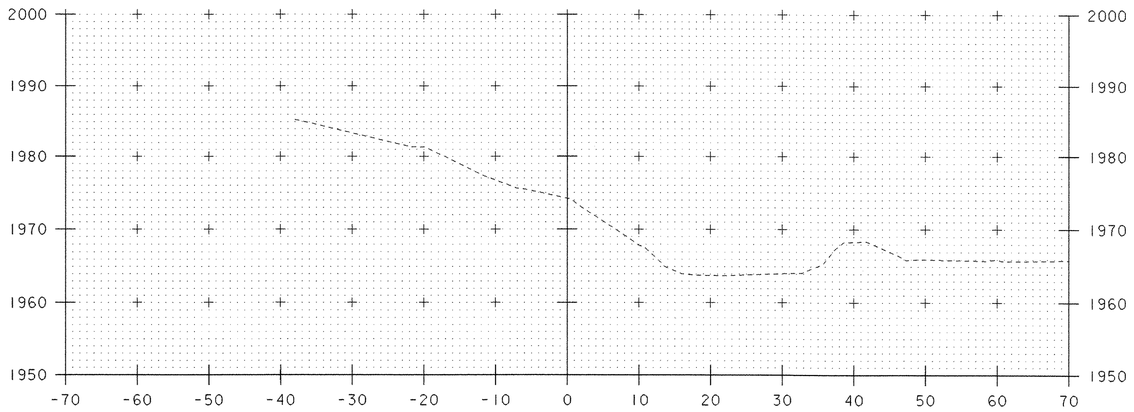
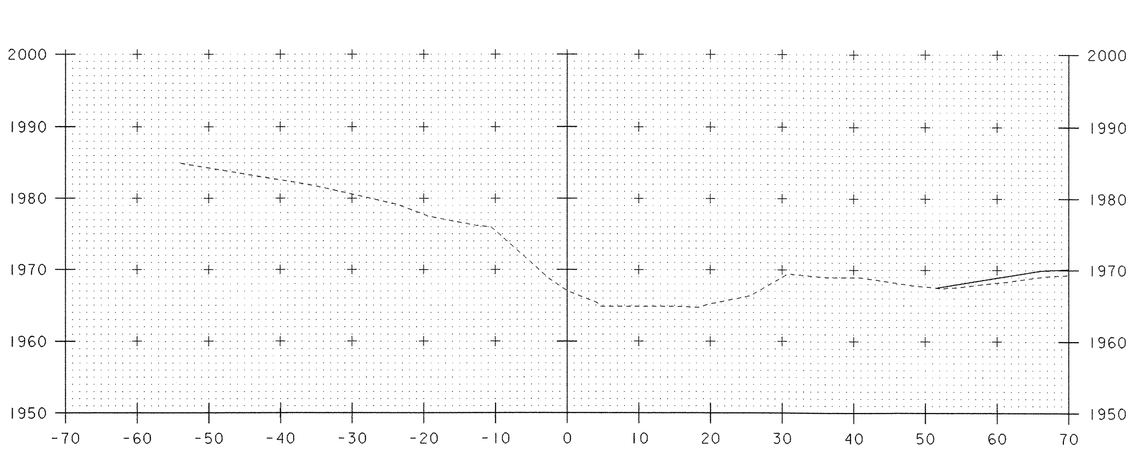
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN GRUBBING MATERIAL
BEGIN UNCLASSIFIED CHANNEL EXCAVATION

SCALE 1" = 10'-0
10 0 10

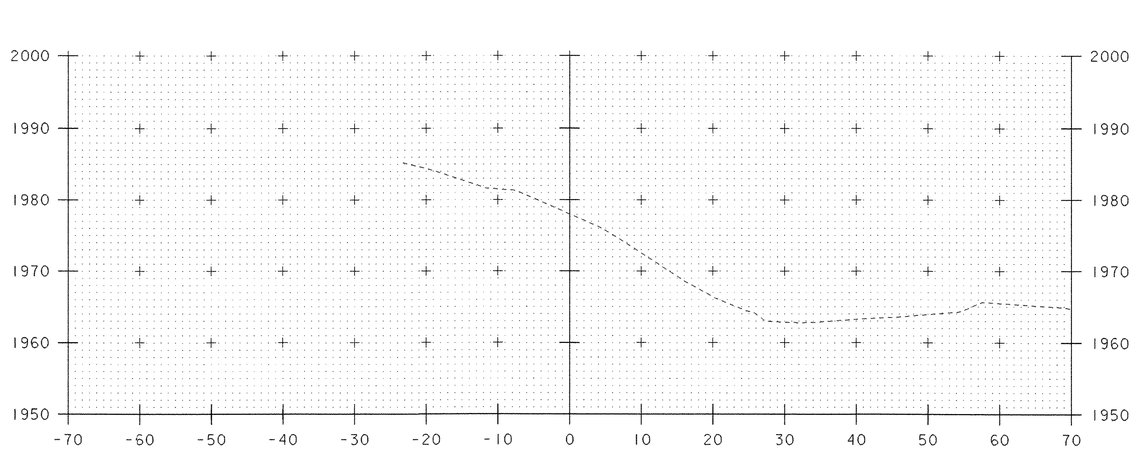
PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176xs.dgn	
IPARM FILE NAME: s04c176ch2.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA. 11+00 TO STA. 11+75	SHEET: 28 OF 39



12+25



12+00



12+50

SCALE 1" = 10'-0
10 0 10

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176xs.dgn	
IPARM FILE NAME: s04c176ch3.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
CHANNEL STA. 12+00 TO STA. 12+50	SHEET: 29 OF 39

EROSION PREVENTION AND SEDIMENT CONTROL NARRATIVE

PROJECT DESCRIPTION

This project involves the replacement of the existing Corrugated Metal Pipe Arch (CMPA) culvert with a pre-cast concrete box culvert, and the related approach work. Bridge #2 is located on Vermont Route 8 in the town of Readsboro, approximately 1.3 miles north of its intersection with VT RTE 100. The new culvert will be a concrete box approximately 88' long, 8' tall and 12' wide. The new culvert will be on the same alignment, at a 45° skew from the centerline of the road.

It is anticipated that this project will last one construction season.

Area of disturbance is approximately 0.42 acres.

SITE INVENTORY AND ANALYSIS

OFF SITE DRAINAGE CHARACTERISTICS
The property surrounding the project site consists of well established vegetation with minimal slopes at the project site. The property surrounding the project site is mostly grass land with the woods line approximately 50-70 feet from the centerline of VT RTE 8 on either side. Due to the nature of the surrounding terrain the project site should not receive any runoff water from off project areas.

DRAINAGE, WATERWAYS, BODIES OF WATER:
The only waterway in the project area is an unnamed tributary to the West Branch of the Deerfield River, which Bridge #2 carries under VT RTE 8.

TOPOGRAPHY, EXISTING ROADS, BUILDINGS, UTILITIES:
The topography of the project site is forest, with grass and brush in the immediate vicinity of the construction site. There are no buildings or utilities in the project area. A section of the VAST trail crosses VT RTE 8 at the project site.

VEGETATION:
The vegetation in the project area is grass and varied brush. The impact to vegetation will be limited to that which is affected by removal of the existing culvert and installation of the replacement culvert. After the project is finished the slopes will be stabilized with stone fill and vegetation will be reestablished with standard seed and mulch practices.

SOILS:
All soil data came from the U.S. Department of Agriculture Soil Conservation Service for the county of Bennington, Vermont. Soil type is classified as Wilmington Fine Sandy Loam. Slopes: 0-8%, very stony, potentially highly erodible land. Soil "K factor" = 0.43.
Note: Generally, K-values indicate the following: 0.0 – 0.23 = low erodibility; 0.24 – 0.36 = moderate erodibility; 0.37 and higher = higher erodibility.

SENSITIVE RESOURCE AREAS:
There are no 'Threatened & Endangered Species' living on or near the project site and there are no historical, archeological or archeologically sensitive areas on or near the project site.

PROXIMITY TO NATURAL OR MAN-MADE FEATURES:
Disturbance of soils near natural or man-made waters will consist of that which is necessary for the replacement of the existing culvert, wingwall and headwall replacement and guardrail work. Disturbed stream banks will be stabilized with Stone Fill, Type II under laid with geo-textile fabric.

TEMPORARY EROSION PREVENTION & SEDIMENT CONTROL

TEMPORARY EROSION PREVENTION MEASURES TO BE UTILIZED INCLUDE:
"Project Demarcation Fencing," denoted -PDF- on the plans, to delineate the limits the contractor can access with construction equipment. This measure limits the area that can be disturbed and exposed to erosion.

Seeding and mulching is needed on areas flatter than 1:3, and biodegradable erosion control matting or equivalent product is needed on slopes greater than or equal to 1:3

Tracking of all exposed slopes, combined with temporary mulching, will also be utilized on a regular basis. If an area will be without construction activity for 7 days, it must be mulched within 48 hours. If the area is to be without construction activity for 14 days, it must be seeded and mulched within 48 hours. The forecast of rainfall events shall also trigger protection of exposed slopes. If rainfall is predicted the Contractor must stabilize the site accordingly prior to the forecasted event.

TEMPORARY MEASURES TO CONTROL SEDIMENT TRANSPORT INCLUDE:
Silt fence will be installed a distance of 5' to 10' from the toe of slopes to prevent sediment transport to down gradient areas. Each line of silt fence will be placed along the contour with ends turned slightly uphill to create a ponding effect should water try to run along the fencing and around the ends. The maximum slope length between separate runs of silt fence is 100'. Silt fence shall be installed prior to any upslope earthwork.

Stabilized construction entrances to the project site, staging areas, as well as waste and borrow areas shall be established. The minimum size of a stabilized construction entrance is 12'X50'. All surface water flowing to or diverted toward a construction entrance shall be piped under the stone. Pipes shall be appropriately sized for the contributing area, however, no pipe smaller then 6" diameter shall be used. See typical detail on 'Erosion & Sediment Control Plan' sheet for materials and construction method to be utilized when constructing a stabilized entrance.

Temporary sediment settling basins may or may not be utilized on this project. If a sediment settling basin is to be used for dewatering a cofferdam, it should be sized based upon the following criteria: (See Sediment Settling Basin Sizing Criteria.) The proposed location of the basin must be included in the contractors plan submittal for approval before use.

Measures such as temporary stone check dams, construction entrances, sediment basins, silt fence, and sand bags shall be checked regularly for accumulation of sediment. Sediment build-up shall be removed when the level of sediment reaches one-half the height of the control measure. Sediments shall be disposed of in an area such that they will not be subject to erosion.

PERMANENT EROSION CONTROL MEASURES

SEVERAL PERMANENT EROSION CONTROL MEASURES WILL BE UTILIZED:
Stone lining of the stream banks with Stone Fill, Type II as specified by VTrans Hydraulics personnel. This stone will provide protection from stream bank erosion during design storm events. In areas with large slopes, stone fill under laid with geo-textile fabric is required. Areas at stations 71+57 LT – 71+88 LT and 70+98 RT – 71+50 RT all require this technique.

Stone Fill, Type II will be utilized at culvert outlets to dissipate water velocities and reduce erosion potential. Grass or other suitable ground cover will be established outside of the roadway limits where stone lining has not been specified. Specifically stations, 71+24 LT – 71+60 LT, 71+84 LT – 72+23 LT, 70+80 RT – 71+60 RT, AND 71+73 RT – 72+00 RT.

All slopes shall be stabilized within 48 hours of reaching final grade or during intermittent phases of construction activity.

GENERAL EROSION & SEDIMENT CONTROL GUIDELINES

The Erosion Control Plans are meant as a guideline for preventing erosion and controlling sediment transportation. The work outlined in this narrative consists of applying measures throughout the life of the project to control erosion and minimize the sediment to receiving waters. The measures include stabilization and structural practices, storm water controls and other pollution prevention controls. This document serves as a guide for the Contractor to make an Erosion Prevention and Sediment Control Plan which shall be submitted to the Construction Environmental Engineer for approval.

Coordinate the installation, use, and removal of erosion and sediment control measures with construction activities to ensure economical, effective and continuous erosion and sediment control. Employ temporary stabilization practices in incremental stages as construction proceeds. The contractor will use additional erosion control measures as necessitated by the sequence of construction and as directed be the engineer. See section 652.10 of the Vermont AOT Standard Specifications for Construction, dated 2001.

Install all erosion and sediment control measures as shown in the Erosion Control Plan or as directed by the engineer. Do not modify the type, size or location of any control or practice without approval of the engineer. All changes shall be approved by the Construction Environmental Engineer and also be noted on the plans, in the weekly inspection report, and reported to the appropriate authority in a timely manner. Inspect all control measures weekly and after each rainfall event. Repair measures shall be taken as needed.

Preventing initial soil erosion is much more effective than treating eroded sediment. Therefore, stabilize all disturbed areas promptly after construction activity has temporarily or permanently ceased. Temporary vegetation established as noted in the plans and approved by the Construction Environmental Engineer. Perimeter control measures shall be installed following clearing, but prior to the start of any grubbing or grading activity, install other temporary controls in incremental stages as construction proceeds.

Maintaining vegetated buffers along stream banks, wetlands or other sensitive areas is a crucial erosion and sediment control measure that should be established wherever possible.

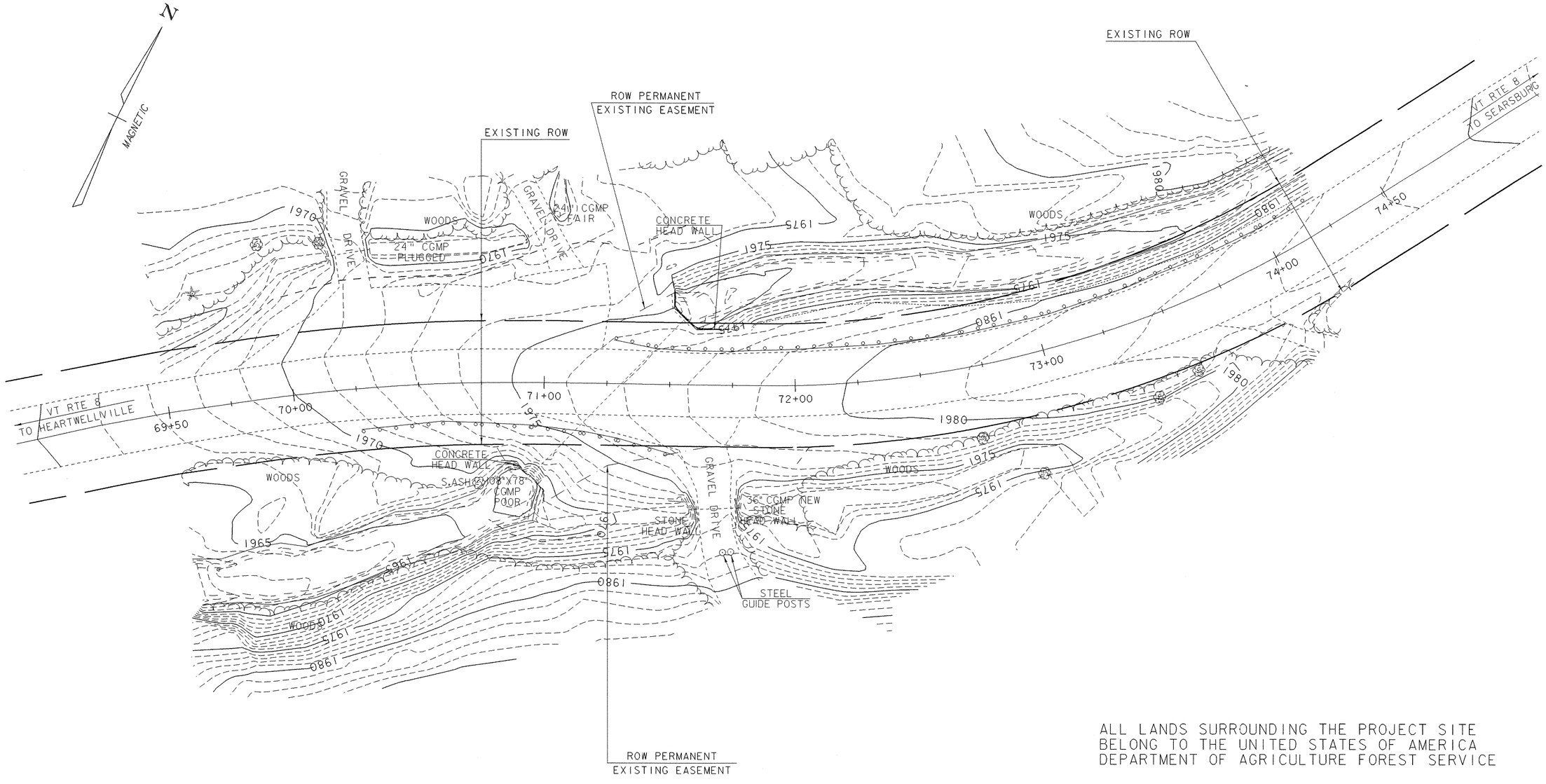
Control only sediment-laden runoff generated by the project site using diversion berms, diversion channels, culverts and/or temporary pipes.

Do not allow construction equipment to operate on the down slope side of perimeter control measures.

SEDIMENT SETTLING BASIN SIZING CRITERIA

PUMP FLOW RATE		REQUIRED SURFACE AREA		LENGTH / WIDTH = 2:1			
Q(gpm)	Q(m^3/s)	(ft^2)	(m^2)	L (ft)	W (ft)	L (m)	W (m)
50	0.0032	595	55	35.0	17.0	10.6	5.3
100	0.0063	1200	111	49.0	24.5	15.0	7.5
150	0.0095	1776	165	59.6	29.8	18.2	9.1
200	0.0126	2368	220	68.8	34.4	21.0	10.5
250	0.0158	2970	276	77.0	38.5	23.4	11.7
300	0.0189	3560	330	84.4	42.2	25.8	12.9
350	0.0221	4155	386	91.2	45.6	27.8	13.9

PROJECT:	PROJECT NO.:
READSBORO	ST CULV(4)
DESIGN FILE NAME: 04c176/structures/so4c176ecnotes.dgn	
IPARM FILE NAME: s04c176ecnarr.i	PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY	DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY: M.GAGULIC
EROSION CONTROL NARRATIVE	SHEET: 30 OF 39



ALL LANDS SURROUNDING THE PROJECT SITE
BELONG TO THE UNITED STATES OF AMERICA
DEPARTMENT OF AGRICULTURE FOREST SERVICE

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

EXISTING CONDITIONS SITE PLAN

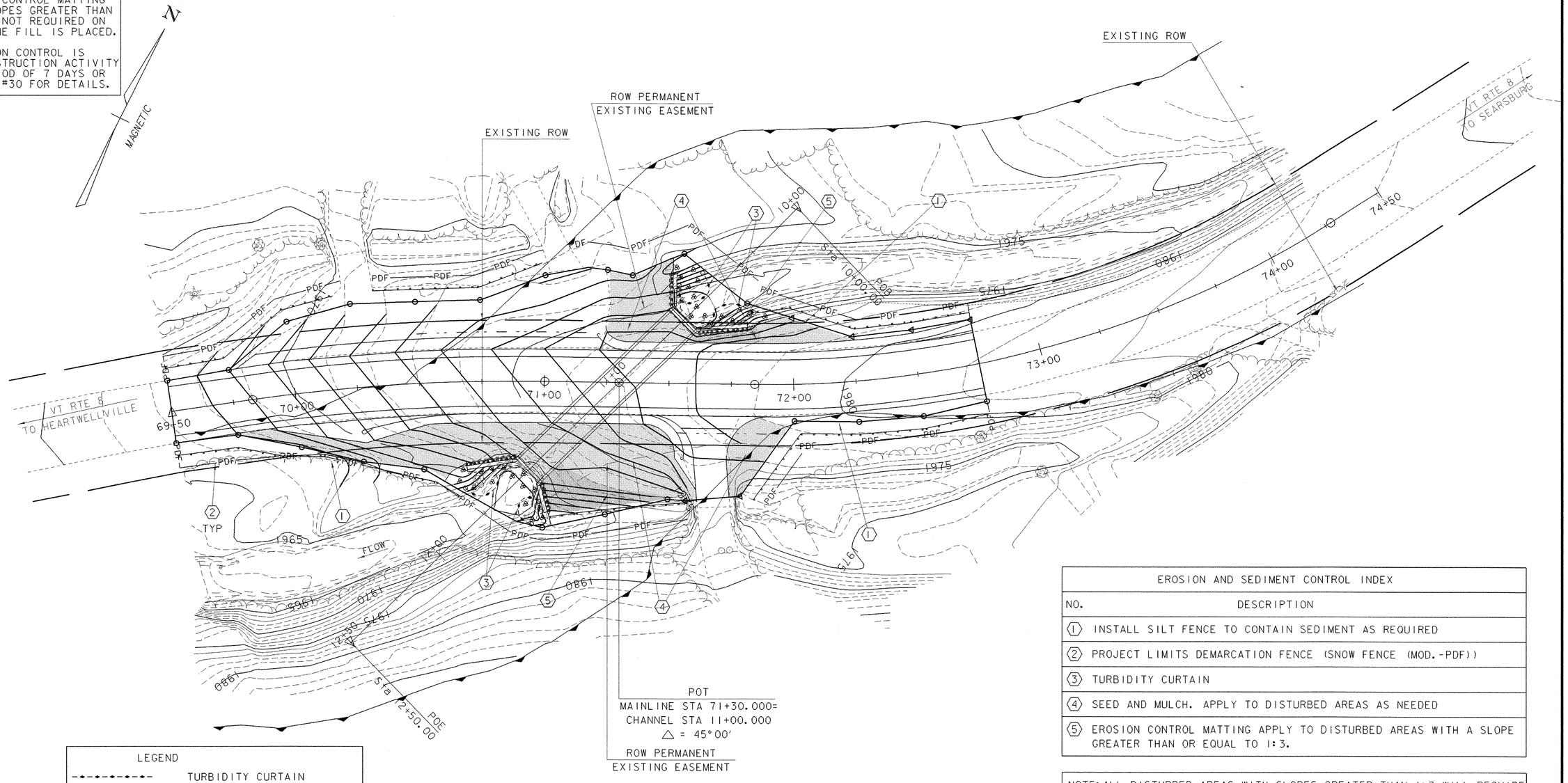
SCALE 1" = 20'-0
20 0 20

PROJECT:	PROJECT NO.:
READSBORO	ST CULV (4)

DESIGN FILE NAME: s04c176/structures/s04c176bdr ero.dgn
IPARM FILE NAME: s04c176excon.i
PLOT DATE: 18-JUL-2006
SURVEYED BY: L.G. ORVIS
SURVEY DATE: 11/2004
SQUAD LEADER: C.P. WILLIAMS
DRAWN BY: M. FESSEL
EXISTING CONDITIONS
SHEET: 31 OF 39

NOTES

1. INSTALL SILT FENCE TO CONTROL SEDIMENT FROM DISTURBED SOILS. INSTALL WHEN NEEDED.
2. SEED AND MULCH DISTURBED AREAS AS REQUIRED. SEE EROSION CONTROL NOTES ON SHEET #30.
3. INSTALL EROSION CONTROL MATTING ON DISTURBED SLOPES GREATER THAN OR EQUAL TO 1:3. NOT REQUIRED ON AREAS WHERE STONE FILL IS PLACED.
4. TEMPORARY EROSION CONTROL IS NEEDED WHEN CONSTRUCTION ACTIVITY STOPS FOR A PERIOD OF 7 DAYS OR MORE. SEE SHEET #30 FOR DETAILS.



EROSION AND SEDIMENT CONTROL INDEX	
NO.	DESCRIPTION
1	INSTALL SILT FENCE TO CONTAIN SEDIMENT AS REQUIRED
2	PROJECT LIMITS DEMARCATION FENCE (SNOW FENCE (MOD.-PDF))
3	TURBIDITY CURTAIN
4	SEED AND MULCH. APPLY TO DISTURBED AREAS AS NEEDED
5	EROSION CONTROL MATTING APPLY TO DISTURBED AREAS WITH A SLOPE GREATER THAN OR EQUAL TO 1:3.

NOTE: ALL DISTURBED AREAS WITH SLOPES GREATER THAN 1:3 WILL REQUIRE TEMPORARY EROSION MATTING. SEE EROSION CONTROL DETAILS SHEET AND CROSS SECTIONS.

LEGEND

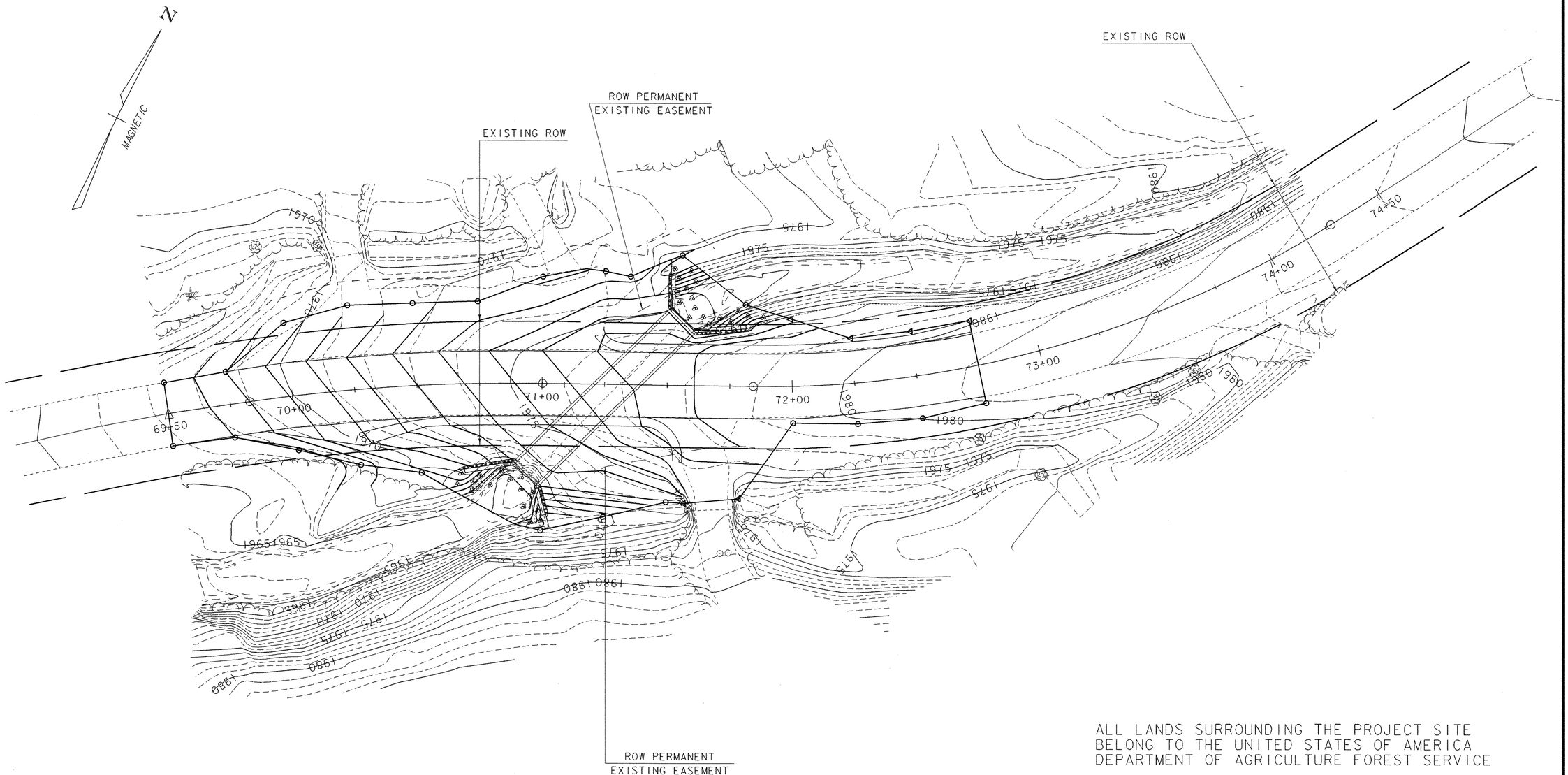
- TURBIDITY CURTAIN
- RIPARIAN BUFFER ZONE
- PDF — PDF PROJECT DEMARCATION FENCE
- SILT FENCE
- SEED AND MULCH
- EROSION CONTROL MATTING

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

EROSION PREVENTION & SEDIMENT CONTROL PLAN

SCALE 1" = 20'-0
20 0 20

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176bdr ero.dgn	
IPARM FILE NAME: s04c176ero.i	PLOT DATE: 18-JUL-2006
SURVEYED BY: L.ORVIS	SURVEY DATE: 11/2004
SQUAD LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
EROSION & SEDIMENT CONTROL PLAN	SHEET: 32 OF 39



ALL LANDS SURROUNDING THE PROJECT SITE
BELONG TO THE UNITED STATES OF AMERICA
DEPARTMENT OF AGRICULTURE FOREST SERVICE

DATUM
VERTICAL NAVD 88
HORIZONTAL ASSUMED

FINAL CONDITIONS SITE PLAN

SCALE 1" = 20'-0
20 0 20

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176bdr ero.dgn	
IPARM FILE NAME: s04c176fincon.i	PLOT DATE: 18-JUL-2006
SURVEYED BY: L.ORVIS	SURVEY DATE: 11/2004
SQUAD LEADER: C.P.WILLIAMS	DRAWN BY: M.FESSEL
FINAL CONDITIONS SITE PLAN	SHEET: 33 OF 39

EROSION AND SEDIMENT CONTROL NOTES:

1. THE AREA OF DISTURBANCE IS APPROXIMATELY 0.42 ACRES.
2. AN UPGRADED TEMPORARY EROSION PREVENTION AND SEDIMENT CONTROL PLAN SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE AGENCY OF TRANSPORTATION.
3. TIME ALL GRADING TO MINIMIZE SOIL EXPOSURE.
4. AT THE END OF EACH DAY'S GRADING OPERATIONS, SHAPE EARTHWORK TO MINIMIZE THE EROSION FROM STORM RUNOFF.
5. PREPARE TEMPORARY DRAINAGE WAYS TO HANDLE CONCENTRATED FLOW UNTIL PERMANENT DRAINAGE IS CONSTRUCTED AND STABILIZED.
6. AFTER COMPLETION OF THE SUBSTRUCTURE, THE SEDIMENT IN THE TRAPS SHALL BE REMOVED AND THE GROUND RESTORED TO ITS ORIGINAL SLOPES OR GRADED AS SHOWN THE CONSTRUCTION DRAWINGS.
7. SEE SHEETS 29-38 FOR EROSION PREVENTION AND SEDIMENT CONTROL DETAILS
8. ASK FOR ASSISTANCE AND RECOMMENDATIONS AS NEEDED.

PERIMETER CONTROL NOTES:

1. IDENTIFY SENSITIVE AREAS AND AREAS PRONE TO EROSION BASED ON SITE EVALUATION.
2. CLEARLY DEMARCATE SENSITIVE AREA TO AVOID DISTURBANCE USING BRIGHTLY COLORED SNOW FENCE, MIN 8" WIDE FLAGGING OR SIMILAR.
3. PROTECT ALL SENSITIVE AREAS AND WATER FEATURES FROM SEDIMENT.
4. DIVERT OR OTHERWISE KEEP ALL CONCENTRATED OFF-SITE "RUN-ON" FROM AREAS TO BE DISTURBED.
5. PERIMETER CONTROLS (SILT FENCE, TURBIDITY CURTAIN, ETC.) TO BE INSTALLED PRIOR TO SOIL DISTURBANCE AND MAINTAINED UNTIL SITE IS PERMANENTLY STABILIZED TO THE SATISFACTION OF THE ENGINEER AND ON-SITE COORDINATOR.
6. SEED AND MULCH SHALL BE APPLIED IMMEDIATELY TO ALL LAWNS DISTURBED BEYOND THE WORK AREA DELINEATED ON THESE PLANS.
7. PREVENT SEDIMENT FROM LEAVING THE SITE BY MAINTAINING AND MODIFYING PERIMETER CONTROLS AS NEEDED.

GENERAL NOTES

PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE THE FOLLOWING ADDITIONAL INFORMATION FOR APPROVAL AND INCLUSION IN THE COMPLETE EROSION AND

1. SEDIMENT CONTROL PLANS:
   - LOCATION OF WASTE, BORROW AND STAGING AREAS, MATERIAL STOCKPILES, REFUELING AND MAINTENANCE AREAS AND CONCRETE TRUCK WASHOUT LOCATION (ATTACH MAP IF NECESSARY). ALL AREAS MUST BE APPROVED BY THE ENVIRONMENTAL SECTION PRIOR TO USE. THE EPSC PLAN FOR EACH SITE IS APPROVED BY THE CONSTRUCTION ENVIRONMENTAL ENGINEER. A DISCUSSION AND ADDITIONAL DETAILS NEEDED FOR PROTECTION AND STABILIZATION OF THESE AREAS SHALL BE INCLUDED AS WELL.
   - MODIFICATIONS REQUIRED TO THESE EROSION PREVENTION AND SEDIMENT CONTROL PLANS.
   - GRADING PLAN / CONSTRUCTION SEQUENCE (INCLUDING PROPOSED DATES ASSOCIATED WITH JOB MILESTONES AS INDICATED ON THE SEQUENCE CONSISTENT WITH PROJECT CRITICAL PATH METHOD SCHEDULE.)
   - REVISED NARRATIVE MATCHING THE GRADING PLAN AND CONSTRUCTION SEQUENCE (RE: TEMPORARY SEEDING AND MULCHING / STABILIZATION).
   - NAME, ADDRESS, PHONE NUMBER AND BASIC QUALIFICATIONS OF "ON-SITE COORDINATOR".
2. WORK SHALL BE GENERALLY CONSISTENT WITH GUIDANCE PROVIDED IN THE LATEST REVISION OF THE VERMONT HANDBOOK FOR SOIL EROSION AND SEDIMENT CONTROL ON CONSTRUCTION SITES AND THE ASSOCIATED GENERAL CONTRACTORS OF VERMONT FIELD HANDBOOK.

SEEDING FORMULA
RURAL AREAS

% WT.	LBS./A.	NAME	PUR %	GERM %
37.5	22.5	CREEPING RED FESCUE	98	85
37.5	22.5	TALL FESCUE	95	90
5.0	3.0	RED TOP	95	90
15.0	9.0	BIRDSFOOT TREFOIL	98	85
5.0	3.0	ANNUAL RYE GRASS	95	85
100.0	60.0			

SEEDING GENERAL NOTES

SEED MIXTURE: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.

SEED: TO BE APPLIED PER SEEDING FORMULAS OR AS DIRECTED BY THE ENGINEER.

FERTILIZER: FORMULA 10-20-10, TO BE USED WITH SEED, APPLIED AT THE RATE OF 500 LBS/ACRE. (HYDRO SEEDERS MAY USE 19-19-19 FORMULA).

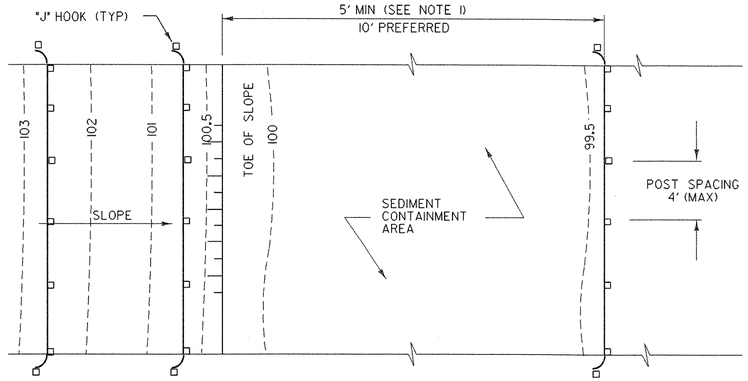
AGRICULTURAL LIMESTONE: TO BE APPLIED AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, OR AS DIRECTED BY THE ENGINEER.

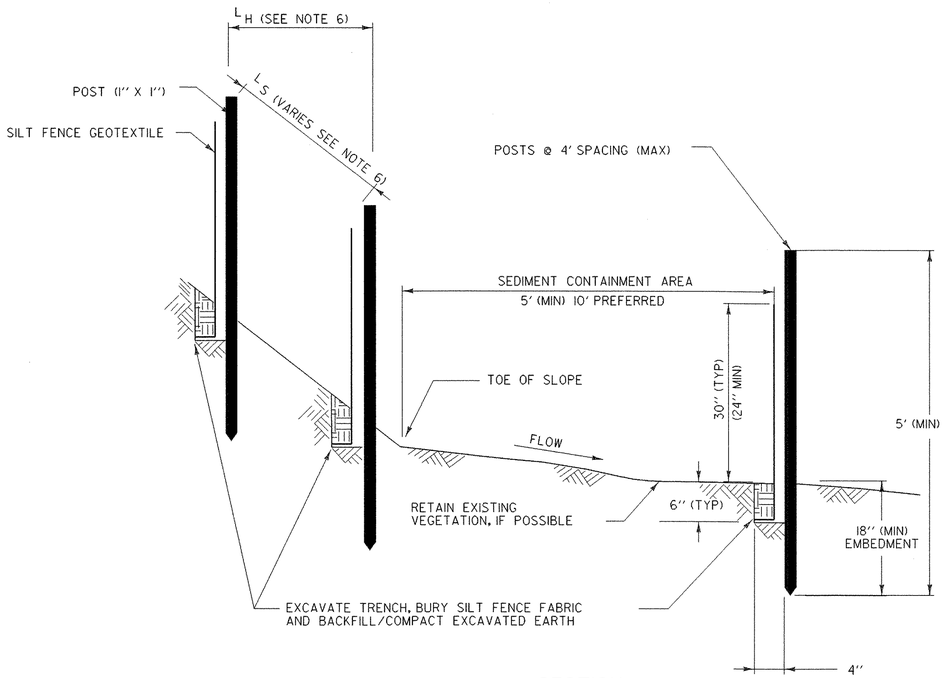
TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

PROJECT:	PROJECT NO.:
READSBORO	ST CULV (4)

DESIGN FILE NAME: 04c176/structures/s04c176ecnotes.dgn
IPARM FILE NAME: s04c176ecnotes.i
PLOT DATE: 18-JUL-2006
DESIGNED BY: E.L.RUSTAY
DRAWN BY: M.FESSEL
SQUAD LEADER: C.P.WILLIAMS
CHECKED BY: M.GAGULIC
EROSION CONTROL NOTES
SHEET: 34 OF 39



PLAN



SECTION
SILT FENCE - TEMPORARY

SILT FENCE

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF SILT FENCE IS TO REDUCE RUNOFF VELOCITY AND TRAP SEDIMENT. VELOCITY IS REDUCED, WATER IS IMPOUNDED BEHIND THE MEASURE, AND SEDIMENT FALLS OUT OF SUSPENSION.

B. SILT FENCE SHALL BE INSTALLED ON A LINE OF EQUAL ELEVATION (CONTOUR). IT MAY BE INSTALLED AT INTERMEDIATE POINTS UP SLOPES AS WELL AS AT THE BOTTOM, AS SHOWN IN THE DETAIL.

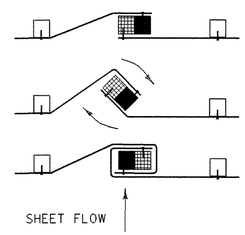
C. SILT FENCE SHALL NOT BE USED ACROSS CONCENTRATED FLOW.

GENERAL NOTES:

1. SILT FENCE SHALL GENERALLY BE PLACED A MINIMUM OF 5 FEET BEYOND TOE OF SLOPE, 10 FEET PREFERRED, TO PROVIDE ADEQUATE AREA FOR SEDIMENT STORAGE AND FACILITATE MAINTENANCE OF SEDIMENT CONTAINMENT AREA.
2. ALL ENDS SHALL BE "J" HOOKED TO TRAP SEDIMENT.
3. IN AREAS WITH TWO SLOPES, SILT FENCE SHALL BE USED TO ERECT A DAM AND TRAP SEDIMENT AT THE BASE OF THE STEEPER SLOPE.
4. THE BOTTOM EDGE OF SILT FENCE SHALL BE BURIED A MINIMUM OF 6 INCHES BELOW GROUND, AND KEYED IN 4 INCHES. THE FENCE SHALL BE INSTALLED WITH THE POSTS ON THE DOWNSTREAM SIDE OF THE FABRIC.
5. MAXIMUM DRAINAGE AREA TRIBUTARY TO 100 FEET OF SILT FENCE SHALL BE 0.25 ACRES.
6. THE FOLLOWING ARE MAXIMUM SLOPE LENGTHS FOR THESE MEASURES:

CONSTRUCTED SLOPE	SLOPE LENGTH (LS) FT	HORIZONTAL LENGTH (LH) FT
3 : 1	80	75
4 : 1	130	125
5 : 1	200	200
> 5 : 1	250	250

7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.
9. SILT FENCE SHALL BE REMOVED WHEN THE AREA HAS BEEN STABILIZED. AT TIME OF REMOVAL OF THE SILT FENCE, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
10. PAYMENT FOR INSTALLATION AND REMOVAL OF SILT FENCE SHALL BE MADE UNDER THE GEOTEXTILE FOR SILT FENCE ITEM.
11. PAYMENT FOR MONITORING SILT FENCE SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING SILT FENCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



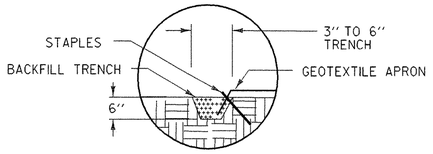
1. PLACE THE END POST OF ONE FENCE INSIDE THE END POST OF THE OTHER FENCE.
2. ROTATE BOTH POSTS AT LEAST 180 DEGREES IN A CLOCKWISE DIRECTION TO CREATE A TIGHT SEAL WITH THE FABRIC MATERIAL
3. DRIVE BOTH POSTS 18 INCHES INTO THE GROUND AND BURY THE FLAP IN THE TRENCH.

SPLICING DETAIL

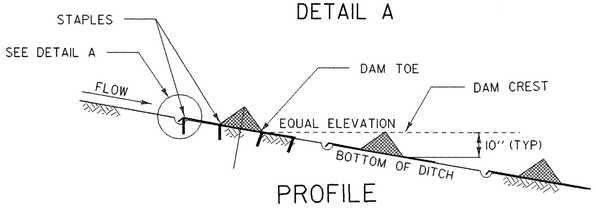
EROSION PREVENTION & SEDIMENT CONTROL DETAILS
SILT FENCE

EPSC-1

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176ecnotes.dgn	
IPARM FILE NAME: s04c176epsc1.i	PLOT DATE: 18-JUL-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
SILT FENCE	SHEET: 35 OF 39



DETAIL A



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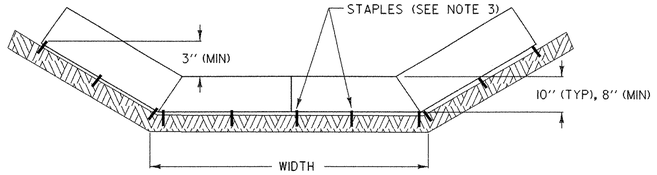
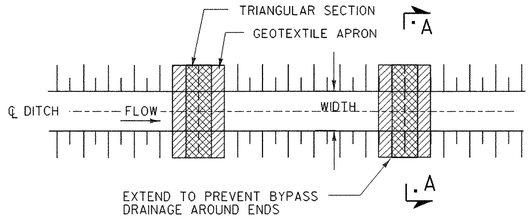


SECTION A-A

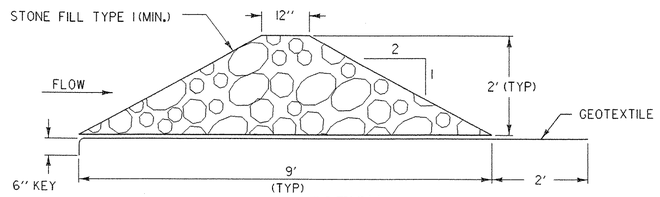


PLAN

CHECK DAM - TEMPORARY (PREFABRICATED)

PREFABRICATED CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1%	50 FT
2 %	40 FT
3 %	25 FT
4 %	20 FT
5 %	15 FT

** BASED ON 10" TYPICAL HEIGHT



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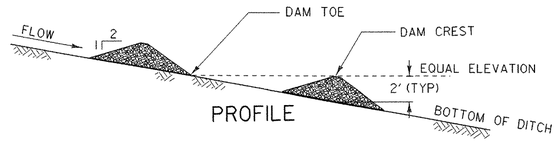

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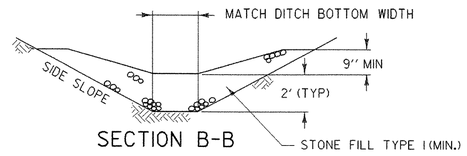
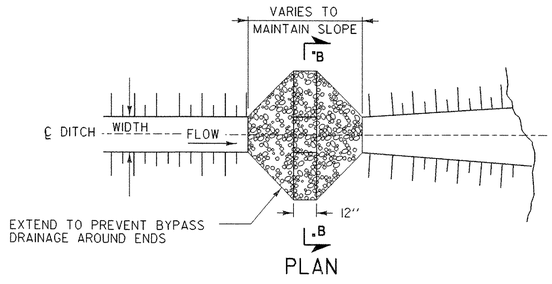


SECTION B-B



PLAN

CHECK DAM - TEMPORARY (STONE)

STONE CHECK DAM PLACEMENT INTERVAL	
DITCH SLOPE	PLACEMENT INTERVAL **
1%	200 FT
2 %	100 FT
3 %	65 FT
4 %	50 FT
5 %	40 FT
6 %	30 FT
8 %	25 FT
10 %	20 FT

** BASED ON 2' TYPICAL HEIGHT

CHECK DAMS

APPLICATION NOTES:

A. THE PRIMARY PURPOSE OF A CHECK DAM IS TO REDUCE EROSION IN A CHANNEL BY REDUCING FLOW VELOCITY.

B. CHECK DAMS WILL CAPTURE SEDIMENT THAT FALLS OUT OF SUSPENSION BEHIND THE CHECK DAM DUE TO DECREASED VELOCITY.

C. CHECK DAMS ARE NOT INTENDED TO FILTER SEDIMENT FROM TURBID WATER.

D. DETAILS SHOWN SHALL BE USED FOR TEMPORARY INSTALLATION ONLY.

E. PREFABRICATED DAMS ARE NOT TO BE USED ON SLOPES GREATER THAN 5% OR PER MANUFACTURER'S SPECIFICATIONS.

F. PREFABRICATED DAM SPECIFICATIONS SHALL BE PROVIDED TO THE ENGINEER FOR APPROVAL PRIOR TO USE.

GENERAL NOTES:

1. GEOTEXTILE SHALL BE INSTALLED UNDER STONE FILL. IT SHALL BE KEYED IN ON THE UP HILL END AND SHALL EXTEND 2 FEET BEYOND THE STONE ON THE DOWN HILL END.

2. CORE MATERIAL FOR THE STONE CHECK DAM SHALL MEET THE GRADATION REQUIREMENTS OF STONE FILL TYPE I (MIN.). STONE SIZE SHOULD BE INCREASED WITH INCREASED SLOPE AND VELOCITY.

3. THE UPHILL END OF THE APRON FOR THE PREFABRICATED CHECK DAM SHALL BE STAPLED AND BURIED AS SHOWN IN DETAIL 'A' OR AS RECOMMENDED BY THE MANUFACTURERS LITERATURE.

4. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.

5. MEASURES SHALL BE CLEANED AND REPAIRED AS NEEDED. SEDIMENT SHALL BE REMOVED WHEN ACCUMULATION REACHES ONE-HALF OF THE MEASURE HEIGHT. SEDIMENT SHALL BE DISPOSED OF AS UNSUITABLE MATERIAL.

6. AT TIME OF REMOVAL OF THE CHECK DAMS, THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.

7. PAYMENT FOR INSTALLATION AND REMOVAL OF CHECK DAMS SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.

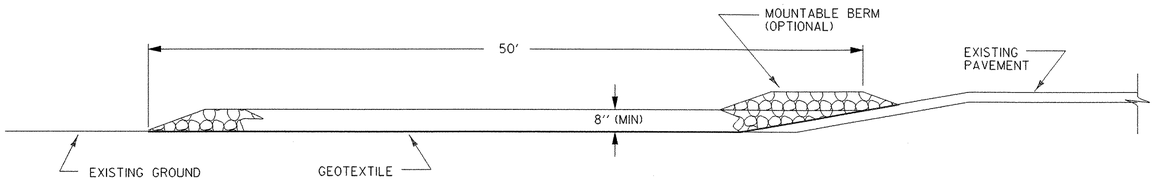
8. PAYMENT FOR MONITORING CHECK DAMS SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.

9. PAYMENT FOR MAINTAINING CHECK DAMS SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

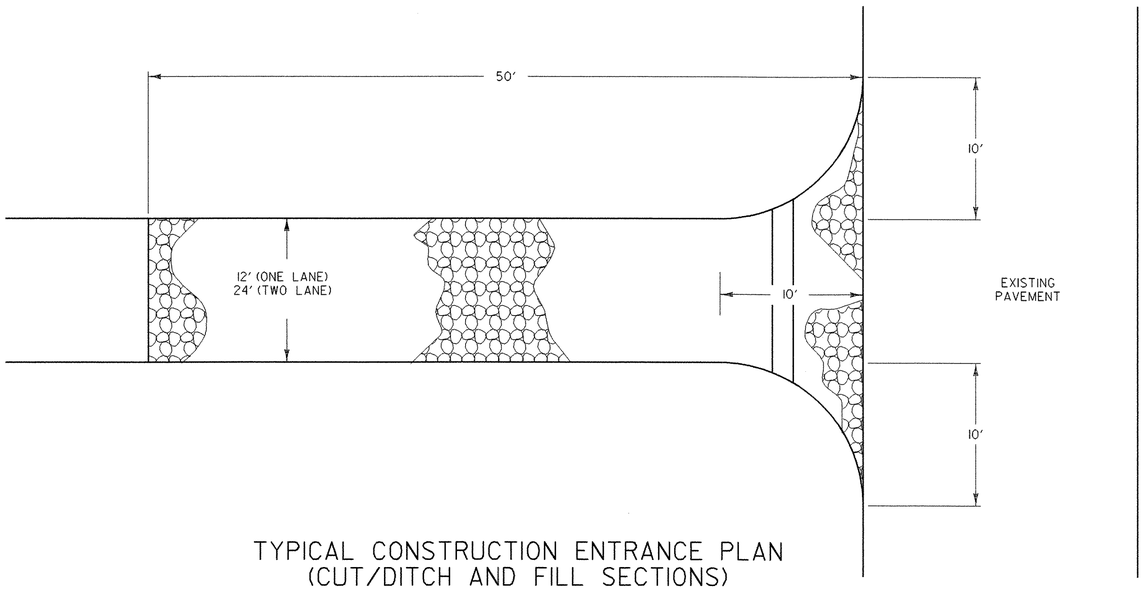
EROSION PREVENTION & SEDIMENT CONTROL DETAILS
CHECK DAMS

EPSC-2

PROJECT:	PROJECT NO.:
READSBORO	ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176ecnotes.dgn	
IPARM FILE NAME: s04c176epsc2.i	PLOT DATE: 18-JUL-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
CHECK DAMS	SHEET: 36 OF 39



TYPICAL CONSTRUCTION ENTRANCE PROFILE
(CUT AND DITCH SECTIONS)



TYPICAL CONSTRUCTION ENTRANCE PLAN
(CUT/DITCH AND FILL SECTIONS)

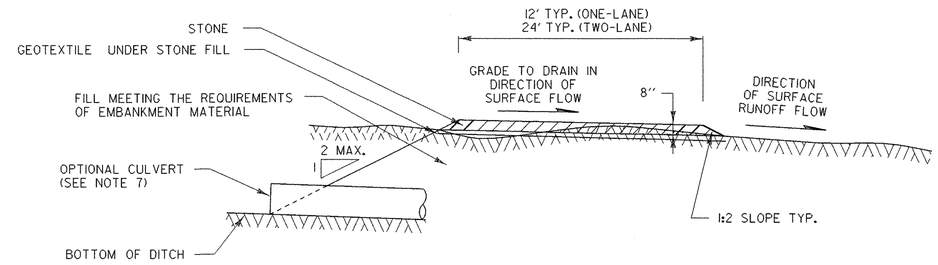
STABILIZED CONSTRUCTION ENTRANCE

APPLICATION NOTES:

A. THE PURPOSE OF A STABILIZED CONSTRUCTION ENTRANCE IS TO REDUCE OR ELIMINATE THE TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY OR STREETS.

GENERAL NOTES:

1. STONE SIZE - USE CLEAN STONE WITH GRADATION BETWEEN 2 INCHES AND 4 INCHES .
2. LENGTH - 50 FEET (MIN)
3. THICKNESS - 18 INCHES (MIN)
4. WIDTH - 12 FEET (MIN)
5. GEOTEXTILE UNDER STONE WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE AS DIRECTED BY THE ENGINEER. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. PROPOSED DRAINAGE PIPES SHALL BE SIZED WITH SUFFICIENT CAPACITY TO CARRY DITCH FLOWS. ALTERNATIVE WAYS OF TRANSPORTING DITCH DRAINAGE ACROSS CONSTRUCTION ENTRANCES MAY BE PROPOSED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.
8. WHEN WASHING OF VEHICLE IS NECESSARY, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
10. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
11. AT THE TIME OF REMOVAL OF THE STABILIZED CONSTRUCTION ENTRANCE THE DISTURBED AREA SHALL BE REPAIRED AND STABILIZED.
12. PAYMENT OF THE STABILIZED CONSTRUCTION ENTRANCE SHALL BE MADE UNDER APPLICABLE ITEMS INCLUDED IN THE CONTRACT PLANS OR UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM.
13. PAYMENT FOR MONITORING STABILIZED CONSTRUCTION ENTRANCES SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
14. PAYMENT FOR MAINTAINING THE CONSTRUCTION ENTRANCE SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

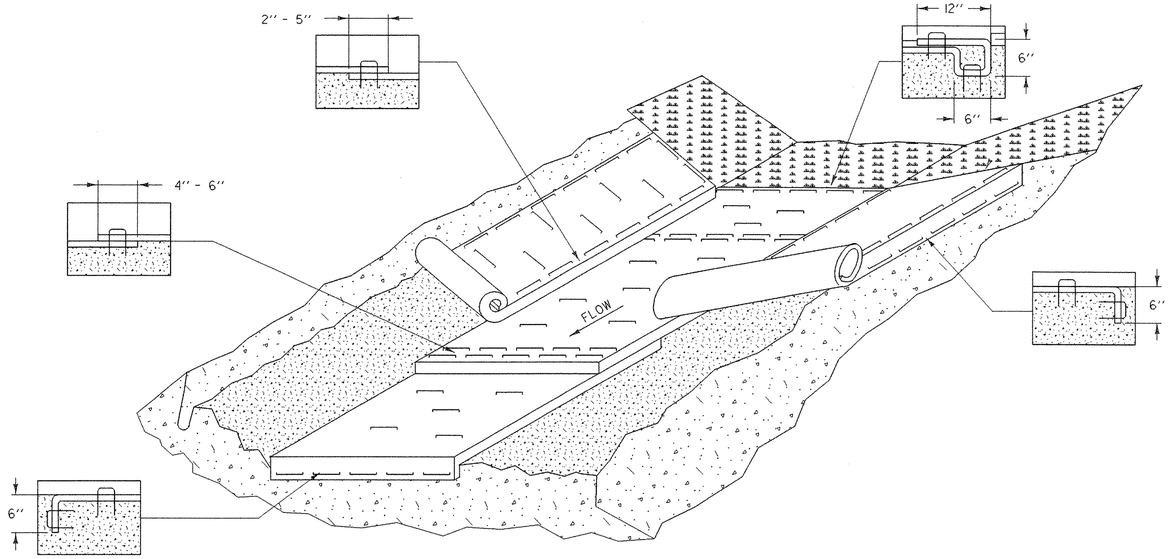


TYPICAL CONSTRUCTION ENTRANCE SECTION

EROSION PREVENTION & SEDIMENT CONTROL DETAILS CONSTRUCTION ENTRANCE

EPSC-4

PROJECT:	PROJECT NO.:
READSBORO	ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176ecnotes.dgn	
IPARM FILE NAME: s04c176epsc4.i	PLOT DATE: 18-JUL-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
CONSTRUCTION ENTRANCE	SHEET: 37 OF 39



EROSION PROTECTION FOR DITCHES

APPLICATION NOTES:

A. THE PURPOSE OF LINING THE DITCH WITH EROSION MATTING IS TO REDUCE EROSION AND AID THE ESTABLISHMENT OF VEGETATION AT LOW VELOCITIES.

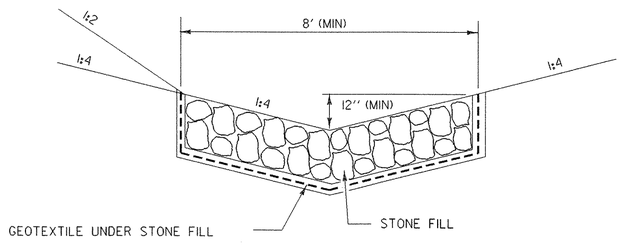
B. THE FOLLOWING CHARTS SHALL BE USED TO DETERMINE THE APPROPRIATE EROSION CONTROL MEASURE:

DITCH AND CHANNEL PROTECTION	
SLOPE	LINING
< 1%	GRASS
1% TO 4 %	EROSION MATTING
4 % TO 10 %	STONE FILL, TYPE I
> 10 %	STONE FILL, TYPE II

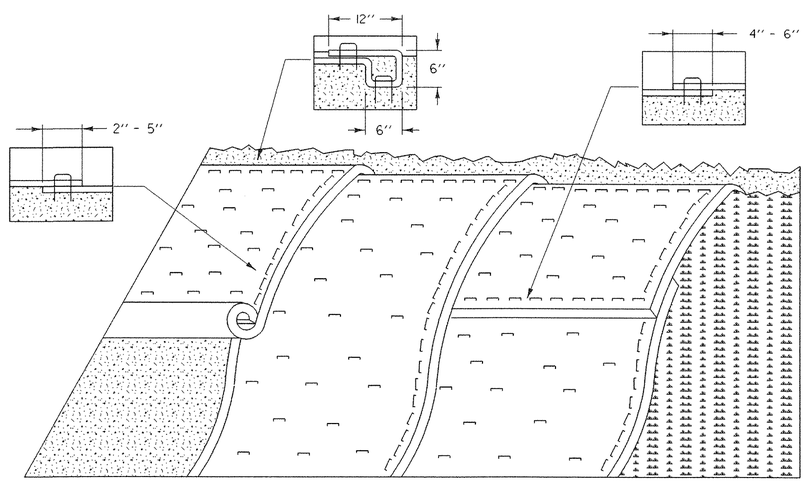
STONE FILL THICKNESS	
STONE FILL TYPE	THICKNESS
TYPE I	1 FT
TYPE II	2 FT

GENERAL NOTES:

1. WATER MAY NEED TO BE DIVERTED TO ALLOW PROPER MATTING INSTALLATION.
2. GRADE AND SMOOTH CHANNEL TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
3. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
4. INSTALL MATTING IN THE CENTER OF THE CHANNEL, IN THE DIRECTION OF THE WATER FLOW.
5. INSTALL MATTING ON THE SIDE SLOPES OF THE CHANNEL, OVERLAPPING THE CENTER MAT.
6. ANCHOR MATTING AS SHOWN. UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INTALLATION INSTRUCTIONS.
7. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
8. MEASURES SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
9. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION CONTROL WITH MATTING ITEM.
10. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
11. PAYMENT FOR MAINTAINING DITCH PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.



TEMPORARY
STONE LINED
DITCH



EROSION PREVENTION FOR SIDE SLOPES

APPLICATION NOTES:

A. THE PURPOSE OF MATTING ON SIDE SLOPES IS TO REDUCE EROSION AND AID THE STABLISHMENT OF VEGETATION

B. EROSION CONTROL MATTING SHALL BE USED FOR THE FOLLOWING REASONS:

- SIDE SLOPES > 3:1 (H:V)
- AREAS WHERE SEED AND MULCH WILL NOT STAY IN PLACE ALONE
- WHERE SEEDING IS OUTSIDE THE GROWING SEASON.

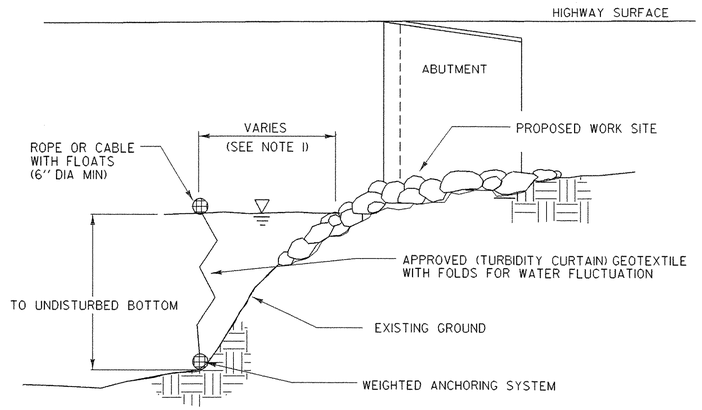
GENERAL NOTES:

1. GRADE AND SMOOTH THE SLOPE TO PROVIDE GOOD MATTING TO SOIL SURFACE CONTACT.
2. APPLY FERTILIZER, LIME, AND SEED PRIOR TO PLACING MATTING.
3. ANCHOR MATTING AS SHOWN, UTILIZING ANCHOR STAPLES. STAPLE PLACEMENT SHALL BE DETERMINED BY THE MANUFACTURER'S INTALLATION INSTRUCTIONS.
4. UNROLL MATTING VERTICALLY DOWN SLOPE IN THE DIRECTION OF WATER FLOW.
5. OVERLAP UPPER MATTING OVER LOWER MATTING AS SHOWN.
6. OVERLAP ADJACENT MATTING AS SHOWN.
7. CUT EXCESS MATTING AT END OF SLOPE AND ANCHOR THE END.
8. MEASURES SHALL BE INSPECTED EVERY SEVEN (7) CALENDAR DAYS AND WITHIN 24 HOURS OF A STORM EVENT GREAT ENOUGH TO CAUSE WATER TO LEAVE THE CONSTRUCTION SITE.
9. MATTING SHALL BE REPAIRED AND RESTAPLED AS NECESSARY TO ENSURE PROPER FUNCTION.
10. PAYMENT FOR INSTALLATION OF MATTING SHALL BE MADE UNDER THE EROSION CONTROL WITH MATTING ITEM.
11. PAYMENT FOR MONITORING EROSION CONTROL MATTING SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.
12. PAYMENT FOR MAINTAINING SLOPE PROTECTION SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM, UNLESS MAINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

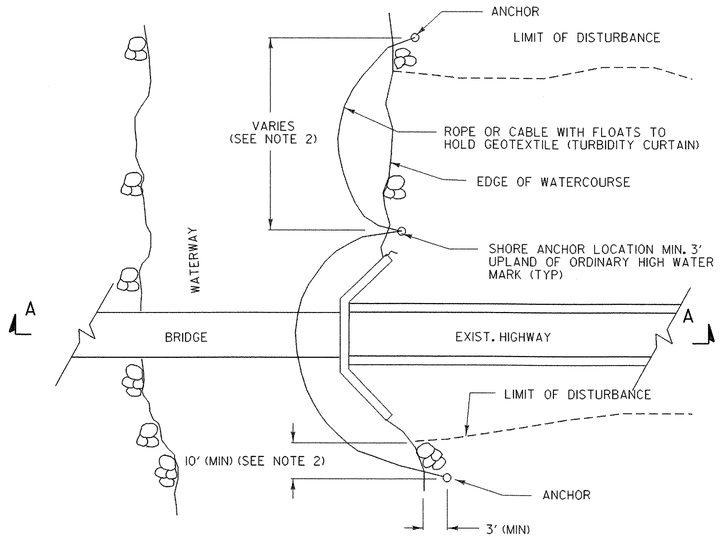
EROSION PREVENTION & SEDIMENT CONTROL DETAILS DITCH & SLOPE PROTECTION

EPSC-5

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176ecnotes.dgn	
IPARM FILE NAME: s04c176epsc5	PLOT DATE: 18-JUL-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
DITCH & SIDE SLOPE PROTECTION	SHEET: 38 OF 39



SECTION A-A



PLAN

TURBIDITY CURTAIN - TEMPORARY

TURBIDITY CURTAIN

APPLICATION NOTES:

A. THE PURPOSE OF A TURBIDITY CURTAIN IS TO SEPARATE WORK AREAS IN OR ADJACENT TO WATERS, TO PREVENT SEDIMENT FROM ENTERING THE WATERS.

B. TURBIDITY CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FT/SEC.

C. TURBIDITY CURTAIN SHALL NOT BE PLACED AT THE OUTLET OF A CULVERT OR DITCH UNLESS THE VELOCITY DOES NOT EXCEED 1.5 FT/SEC.

D. THE DETAIL DEPICTS WORK AT A BRIDGE LOCATION, BUT TURBIDITY CURTAIN MAY BE APPLIED AT OTHER LOCATIONS.

GENERAL NOTES:

1. THE TURBIDITY CURTAIN SHALL BE PLACED AS CLOSE TO THE WORK AS POSSIBLE WITHOUT INTERFERING WITH CONSTRUCTION OPERATIONS.

2. THE TURBIDITY CURTAIN SHALL BE A MAXIMUM OF 100 FEET LONG BETWEEN ANCHORS. LAST SECTION SHALL TERMINATE A MINIMUM OF 10 FEET BEYOND THE LIMIT OF DISTURBANCE.

3. THE CONTRACTOR SHALL MONITOR THE TURBIDITY CURTAIN, TAKING INTO ACCOUNT WEATHER PATTERNS AND PREVAILING WIND DIRECTIONS THAT MAY AFFECT WATER LEVELS, VELOCITY AND MOVEMENT OF THE TURBIDITY CURTAIN.

4. THE TURBIDITY CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE TO MINIMIZE ESCAPE OF SEDIMENTS INTO THE WATERWAY.

5. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE THAT ALLOWS THE CURTAIN TO CONFORM TO THE CONTOUR ON THE BOTTOM OF THE WATERWAY.

6. PAYMENT FOR INSTALLATION AND REMOVAL OF THE TURBIDITY CURTAIN SHALL BE MADE UNDER THE GEOTEXTILE FOR FILTER CURTAIN ITEM.

7. PAYMENT FOR MONITORING TURBIDITY CURTAIN SHALL BE MADE UNDER THE MONITORING EROSION & SEDIMENT CONTROL PLAN ITEM.

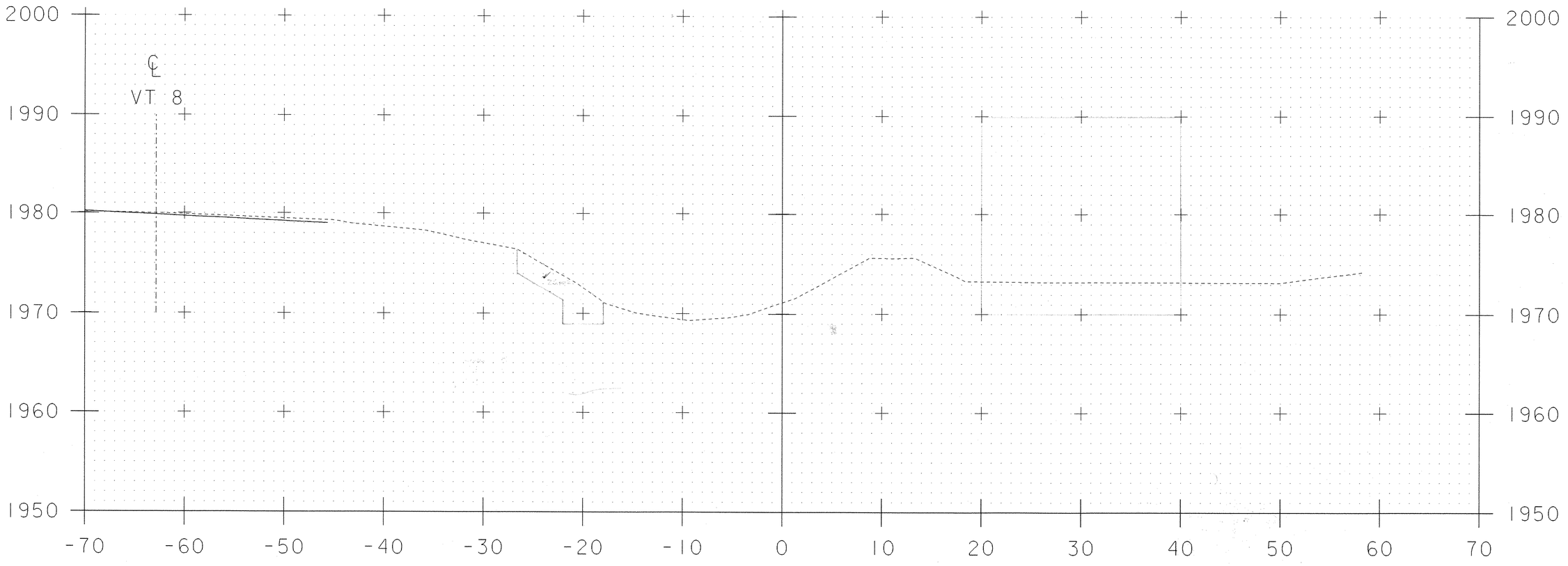
8. PAYMENT FOR MAINTAINING TURBIDITY CURTAIN SHALL BE MADE UNDER THE FIELD MAINTENANCE OF EROSION & SEDIMENT CONTROL PLAN ITEM. UNLESS MINTENANCE IS REQUIRED DUE TO POOR INSTALLATION PRACTICES.

EROSION PREVENTION & SEDIMENT CONTROL DETAILS TURBIDITY CURTAIN

EPSC-6

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176ecnotes.dgn	
IPARM FILE NAME: s04c176epsc6.i	PLOT DATE: 18-JUL-2006
DESIGNED BY:	DRAWN BY:
SQUAD LEADER: C.P. WILLIAMS	CHECKED BY:
TURBIDITY CURTAIN	SHEET: 39 OF 39


PC 71+84.39
PT 71+00.22
11+00 Channel
71+30
Flow
C U R B
C U R B
backahead
Readsboro
AC STP ST CULV(4)
Sheet #1 of 22

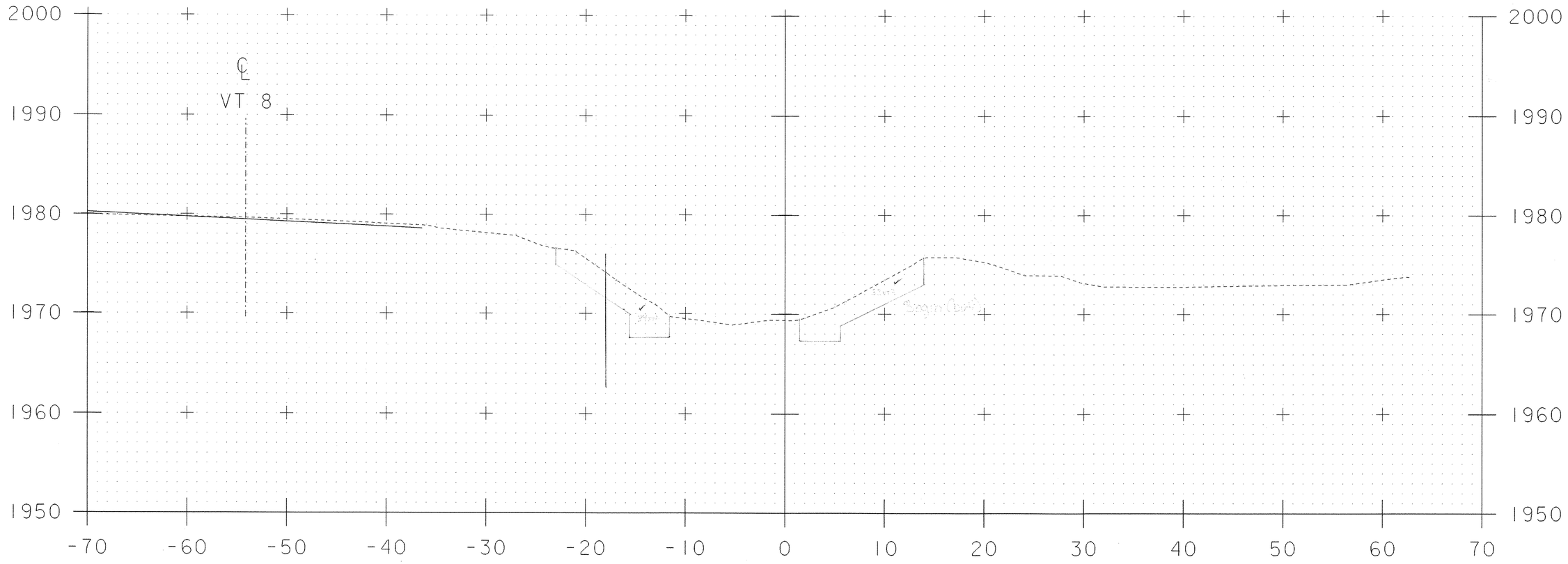


10+35 Bat

Sheet #2 of 22

PROJECT:	PROJECT NO.:
READSBORO	ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res2.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+35.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
5 0 5

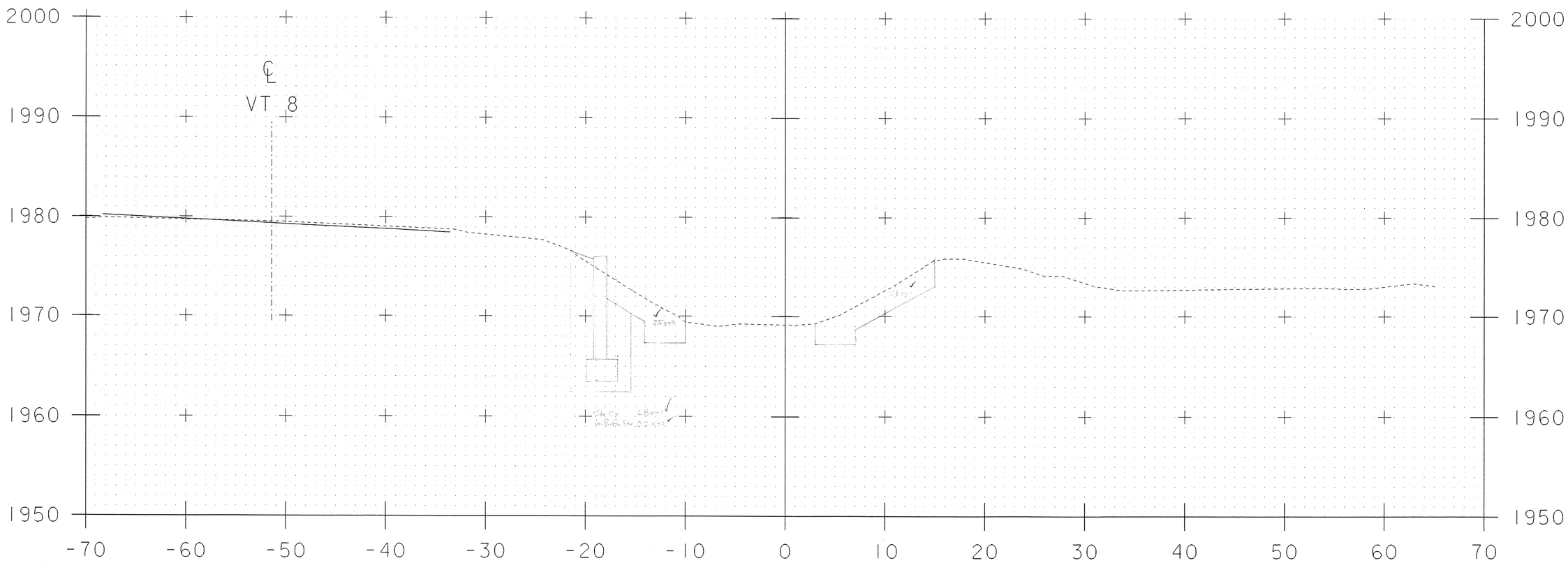


10+45 = Zero Structure Excavation

Sheet #3 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res3.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+45.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
5 0 5

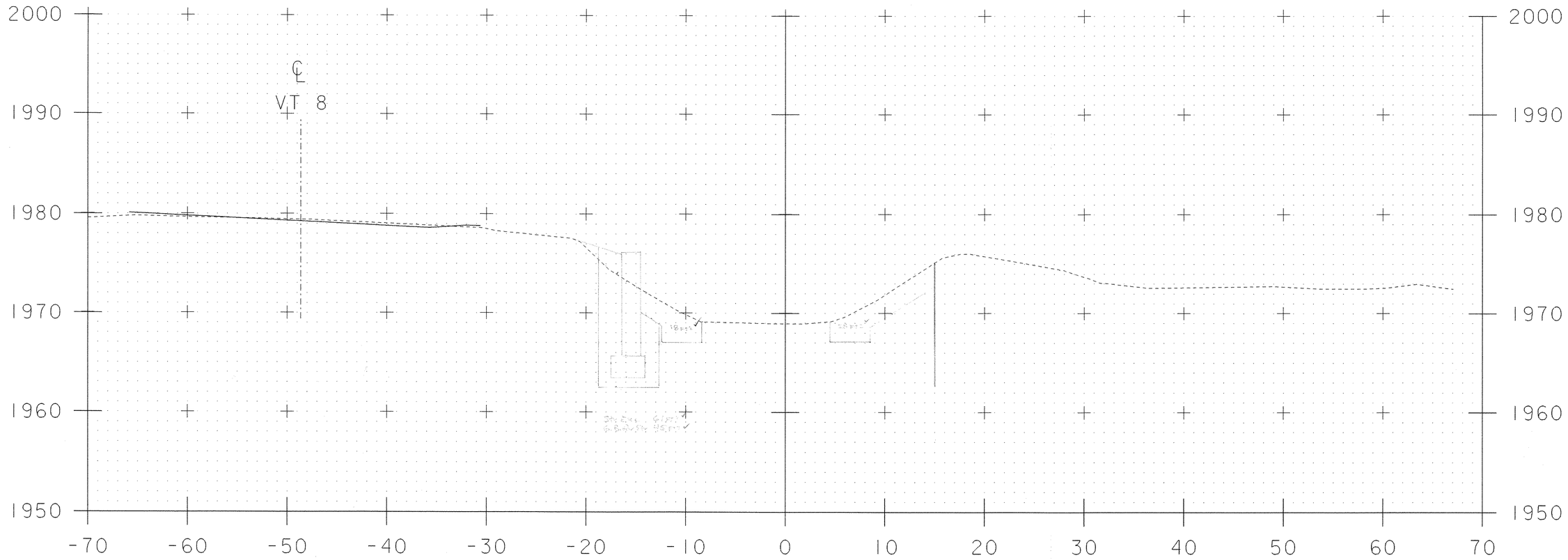


10+48

Sheet #4 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res4.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+48.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
5 0 5



10+51

SCALE 1" = 5'-0
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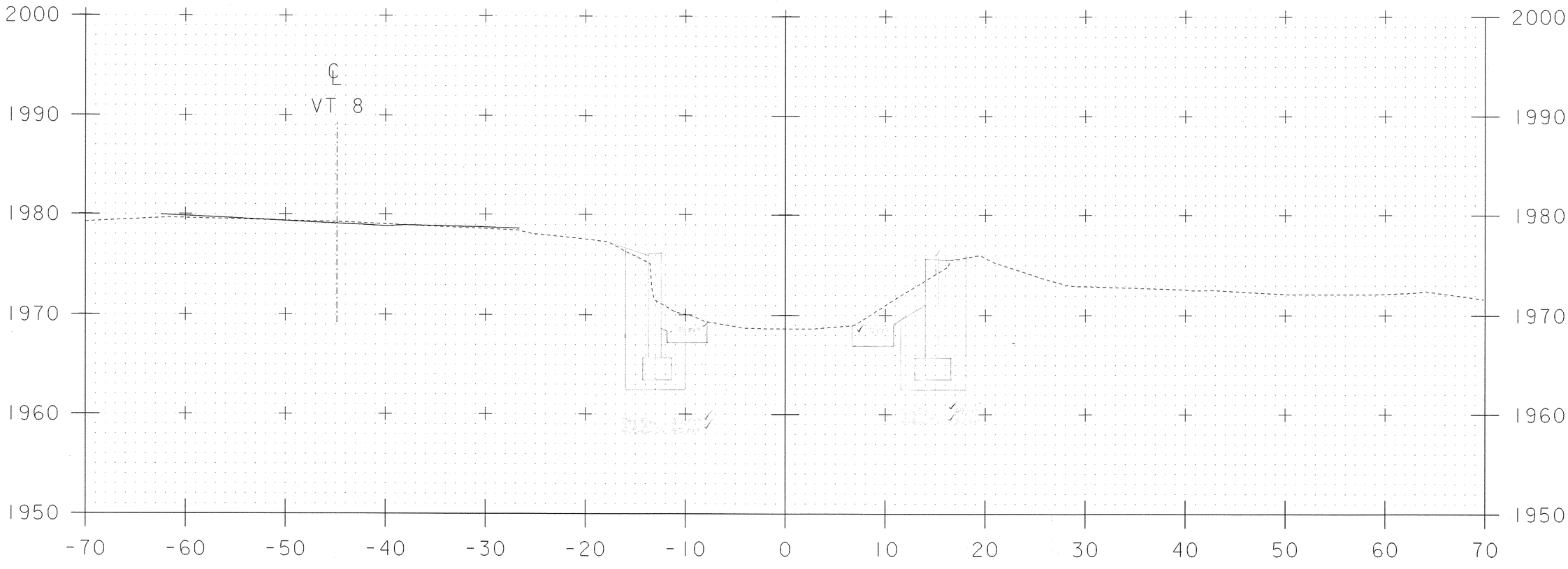
Sheet # 5 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res5.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+51.00	SHEET: 27 OF 39



10+55

Sheet #6 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res6.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+55.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
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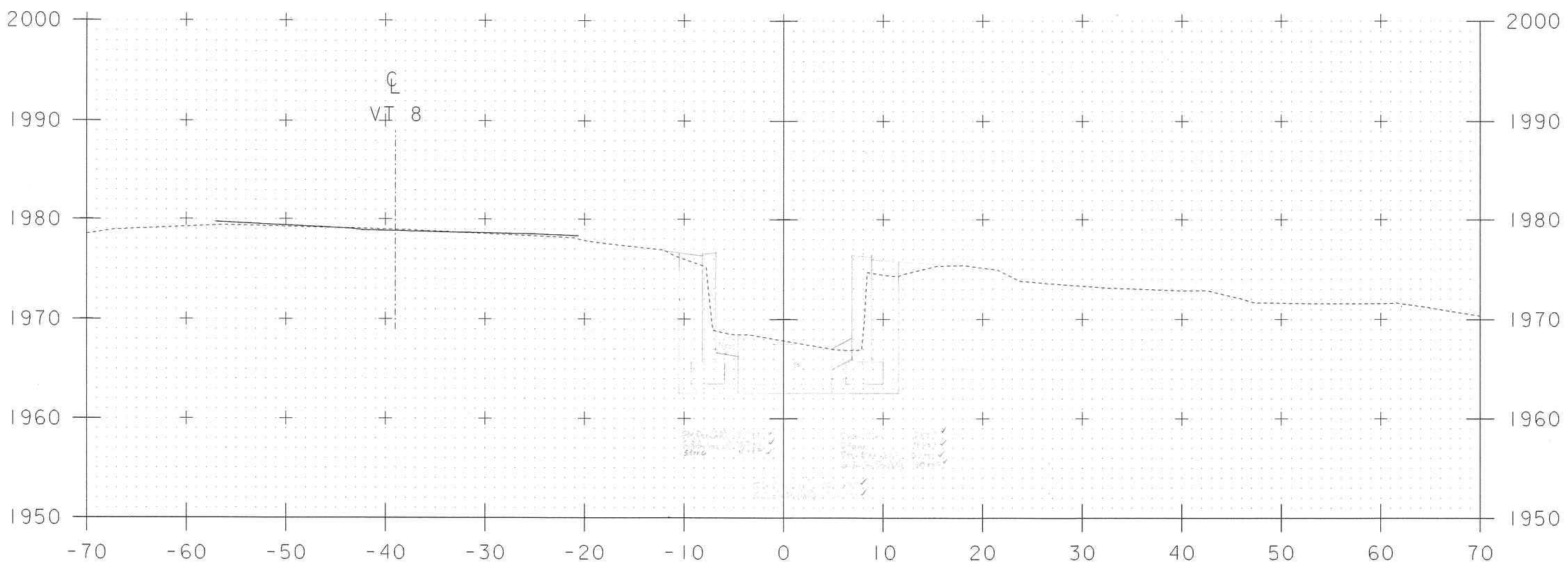
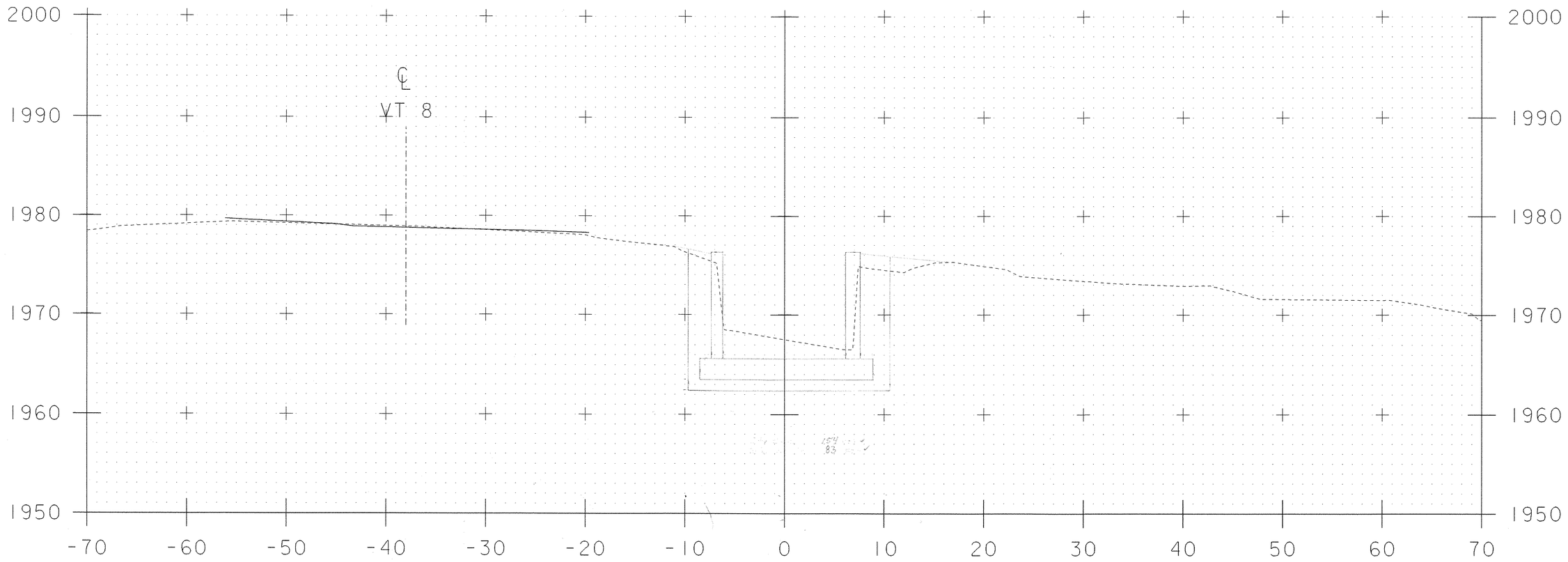


10+61

SCALE 1" = 5'-0
5 0 5

Sheet # 7 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res7.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+61.00	SHEET: 27 OF 39



10+62

Sheet #8 of 22

PROJECT:	PROJECT NO.:
READSBORO	ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res8.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+62.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
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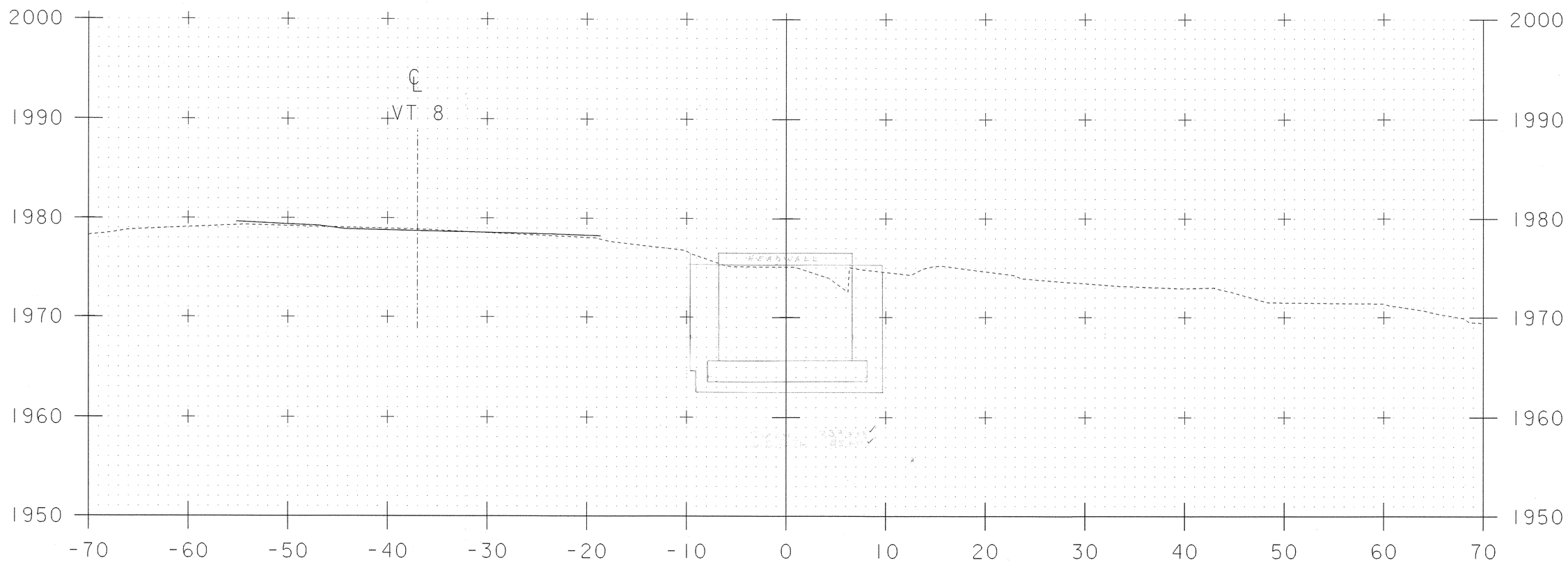
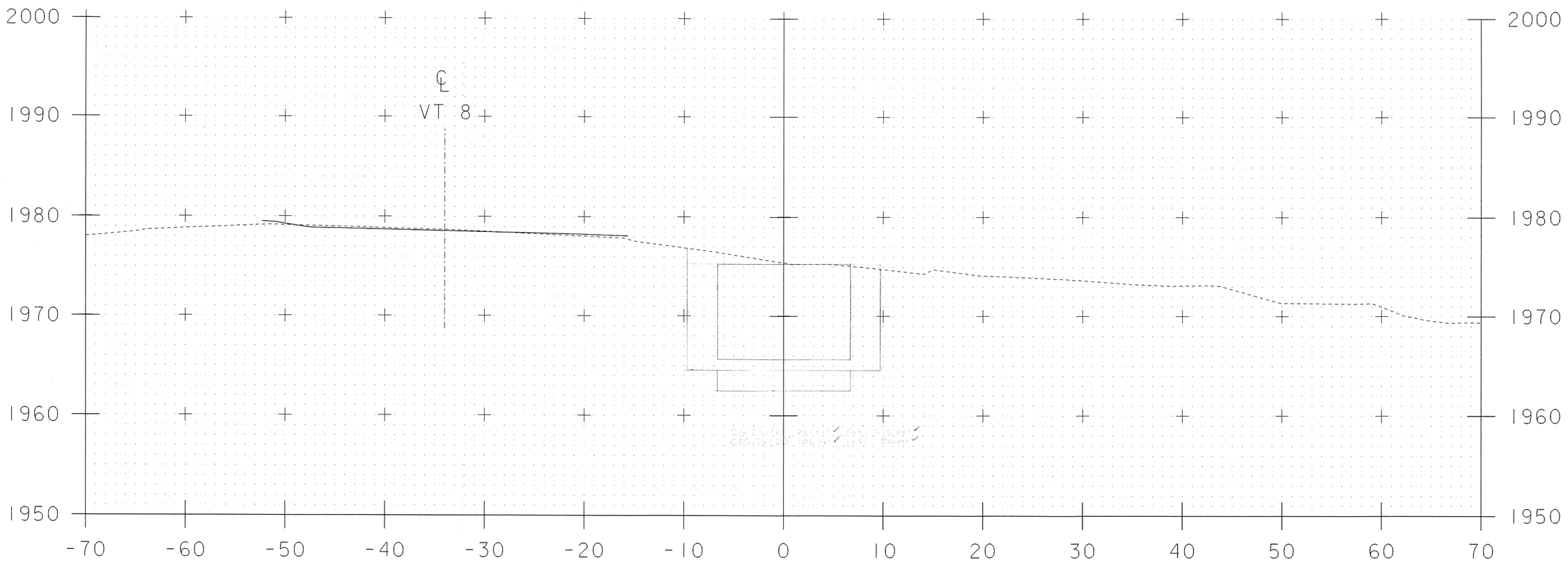


10+63

SCALE 1" = 5'-0
5 0 5

Sheet #9 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res9.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+63.00	SHEET: 27 OF 39



10+66

Sheet #10 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res10.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+66.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
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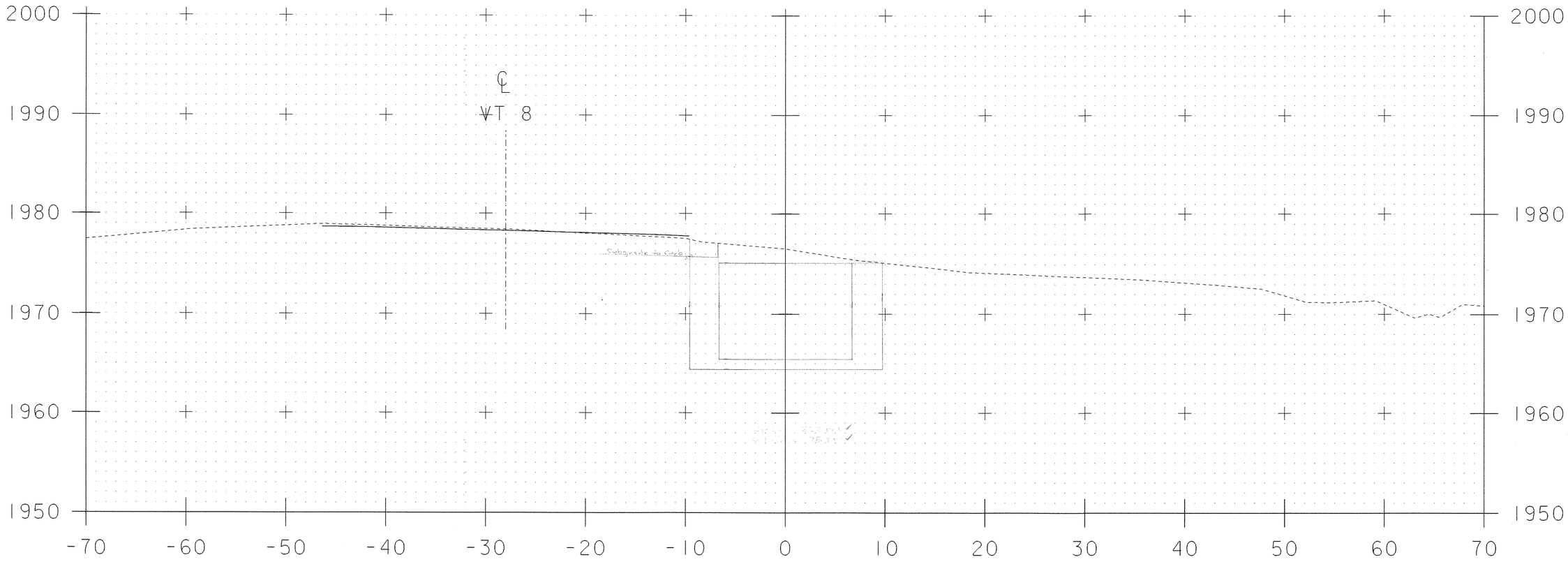

10+72

Sheet #11 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res11.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+72.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
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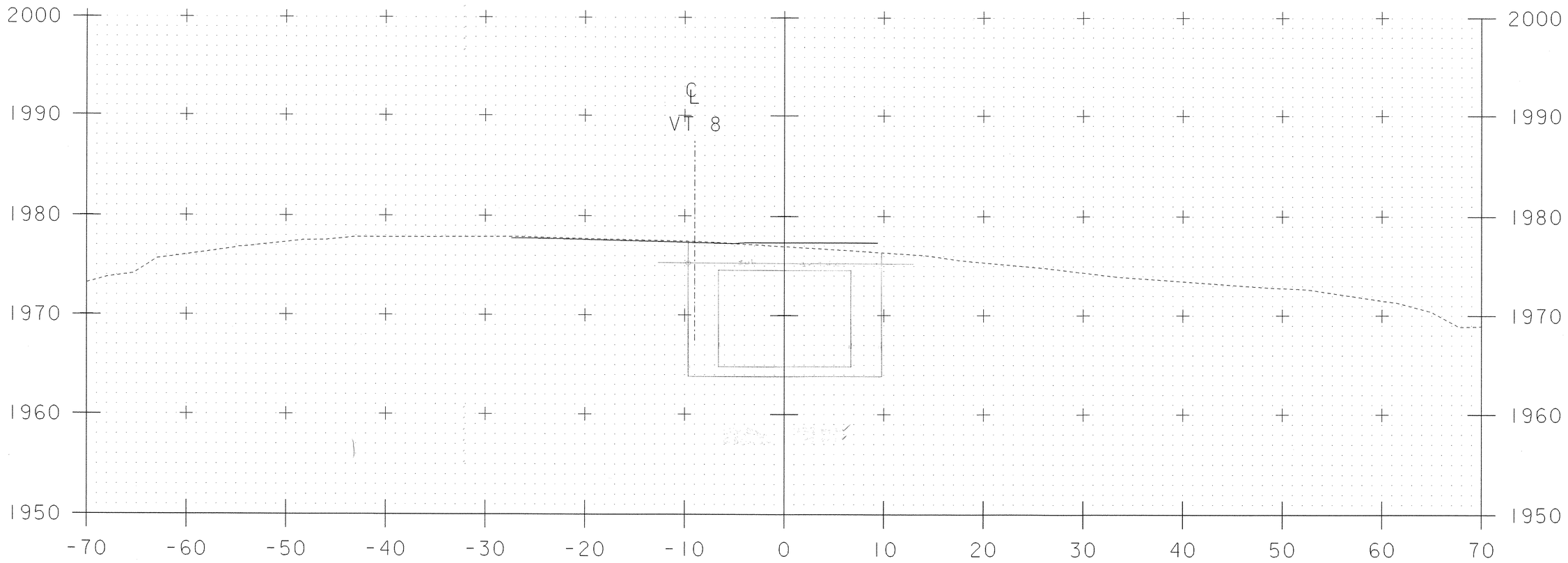
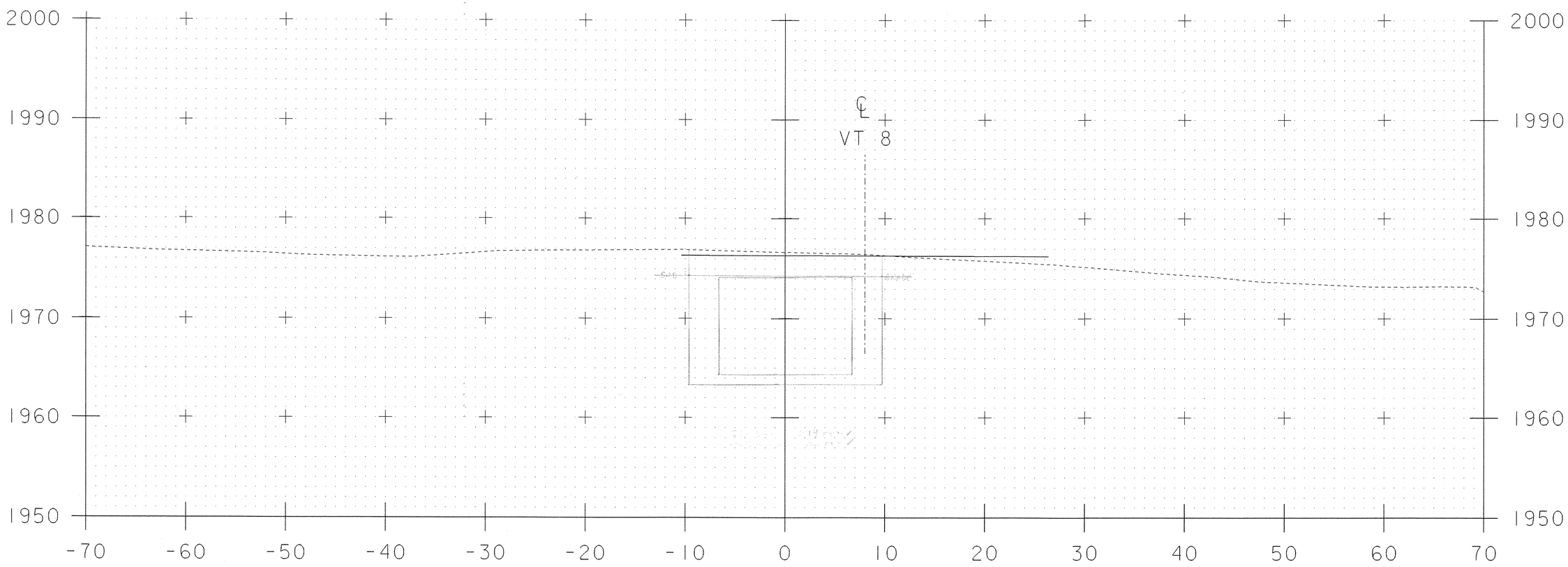


10+91

Sheet #12 of 22

SCALE 1" = 5'-0
5 0 5

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res12.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 10+91.00	SHEET: 27 OF 39

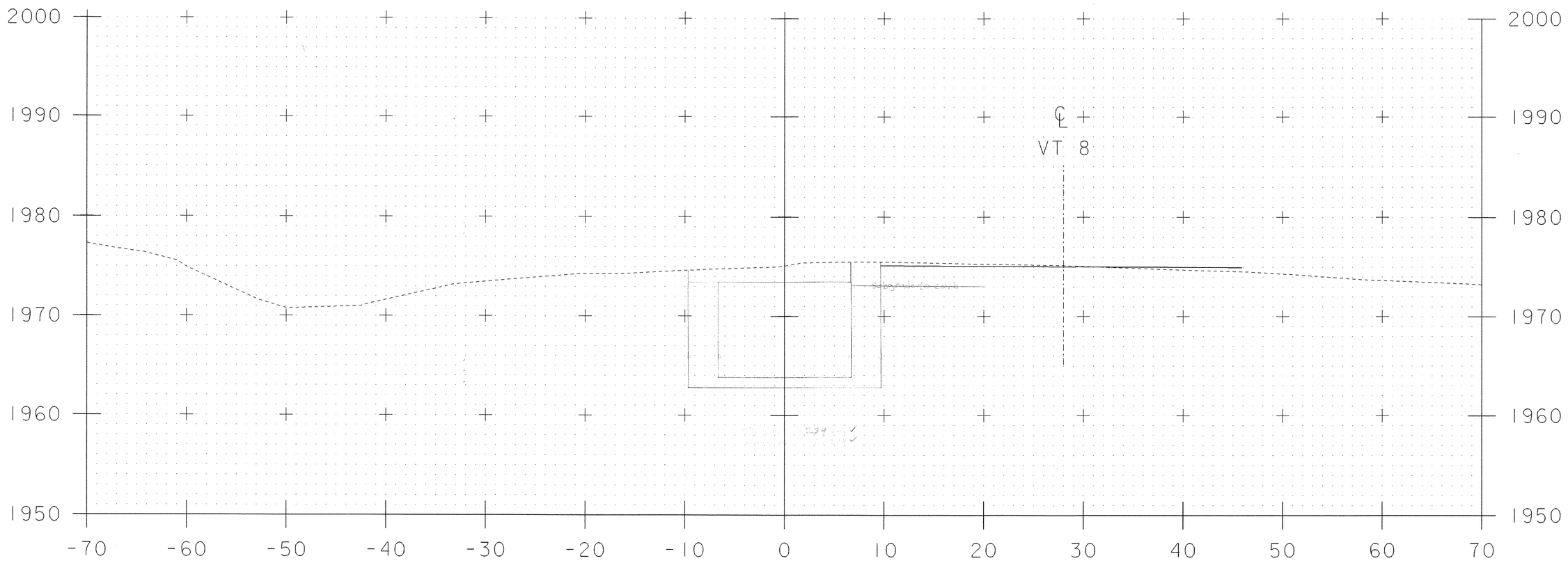


11+08

SCALE 1" = 5'-0
5 0 5

Sheet # 13 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res13.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+08.00	SHEET: 27 OF 39



11+28

Sheet # 14 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res14.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+28.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
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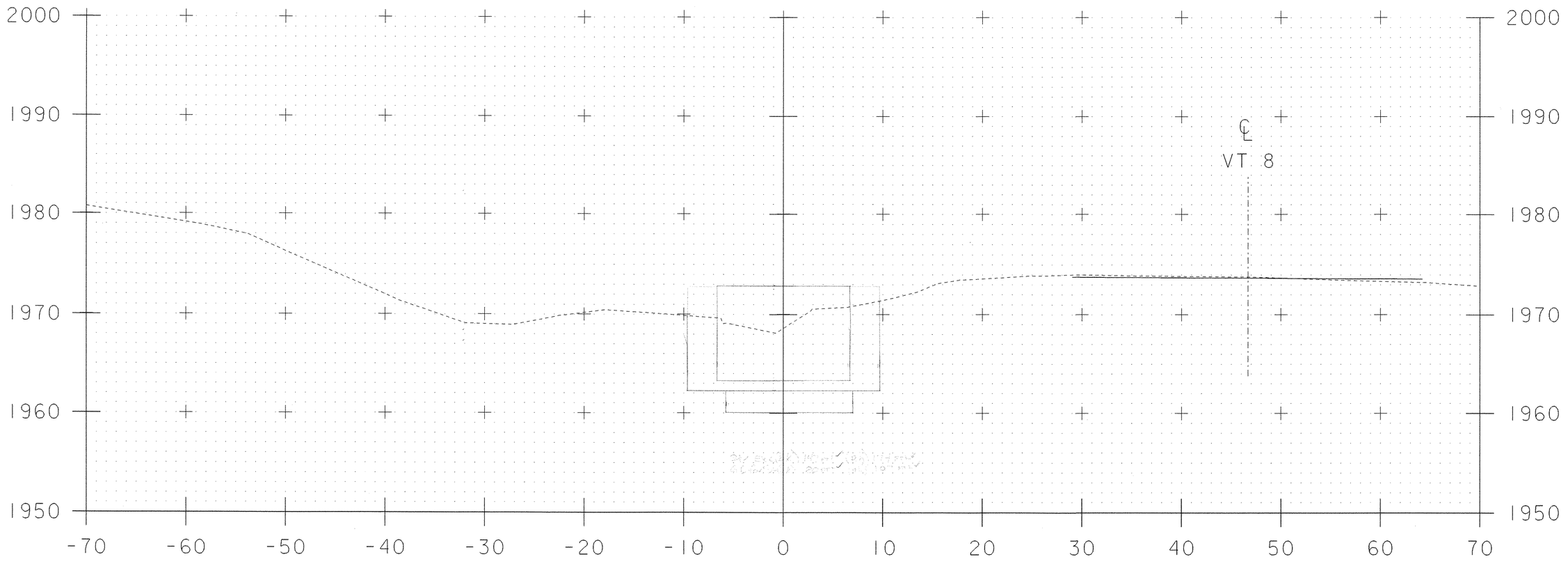

11+48

Sheet # 15 of 22

PROJECT:	PROJECT NO.:
READSBORO	ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res15.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+48.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
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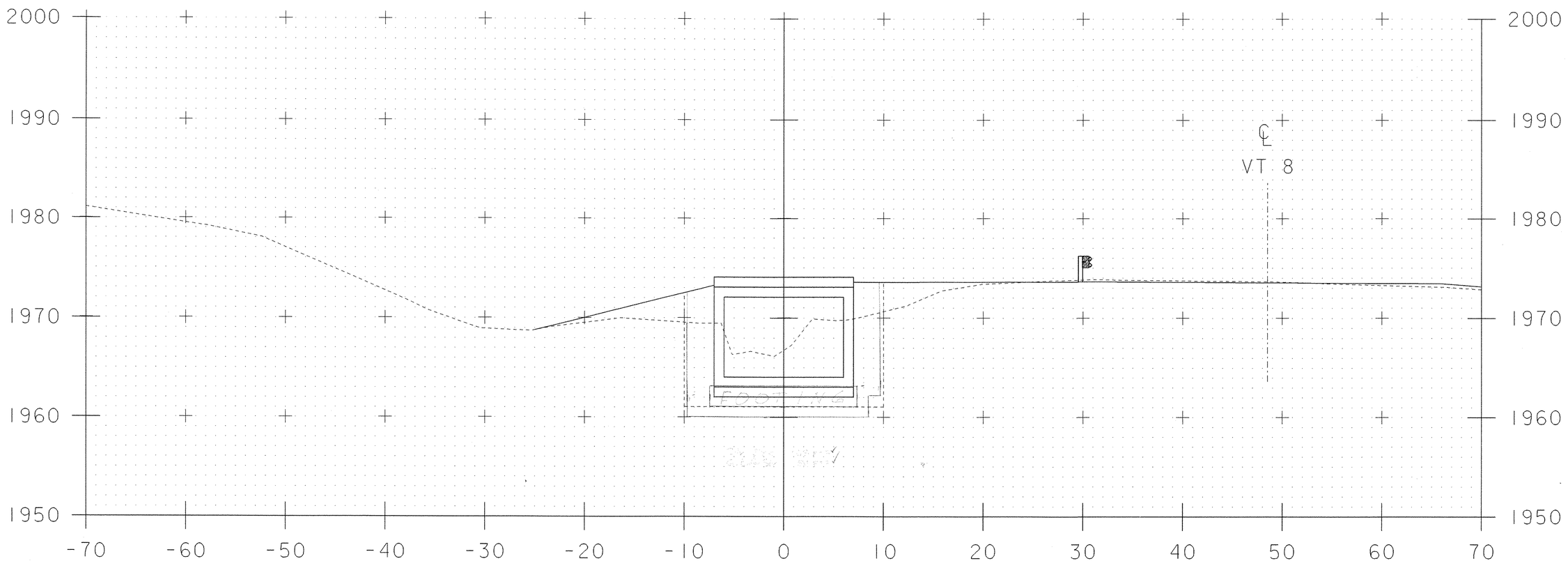
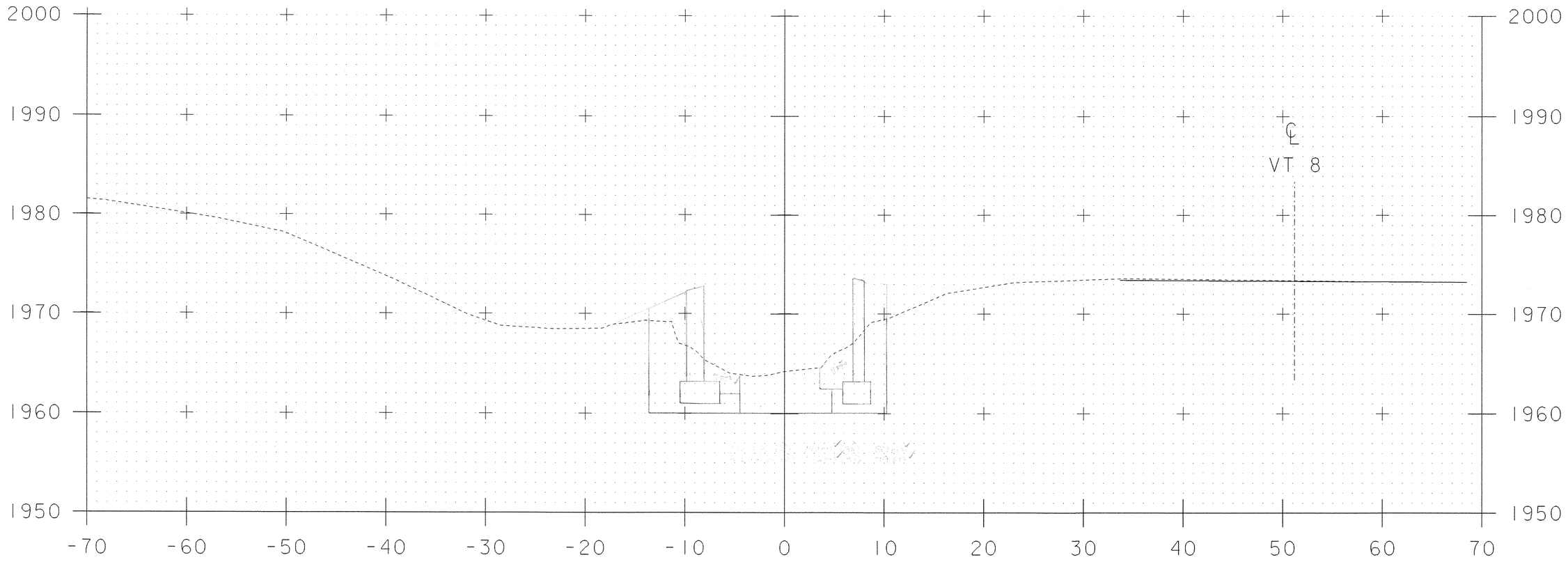


11+50

SCALE 1" = 5'-0
5 0 5

Sheet # 16 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res16.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+50.00	SHEET: 27 OF 39



11+53

Sheet #17 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res18.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+53.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
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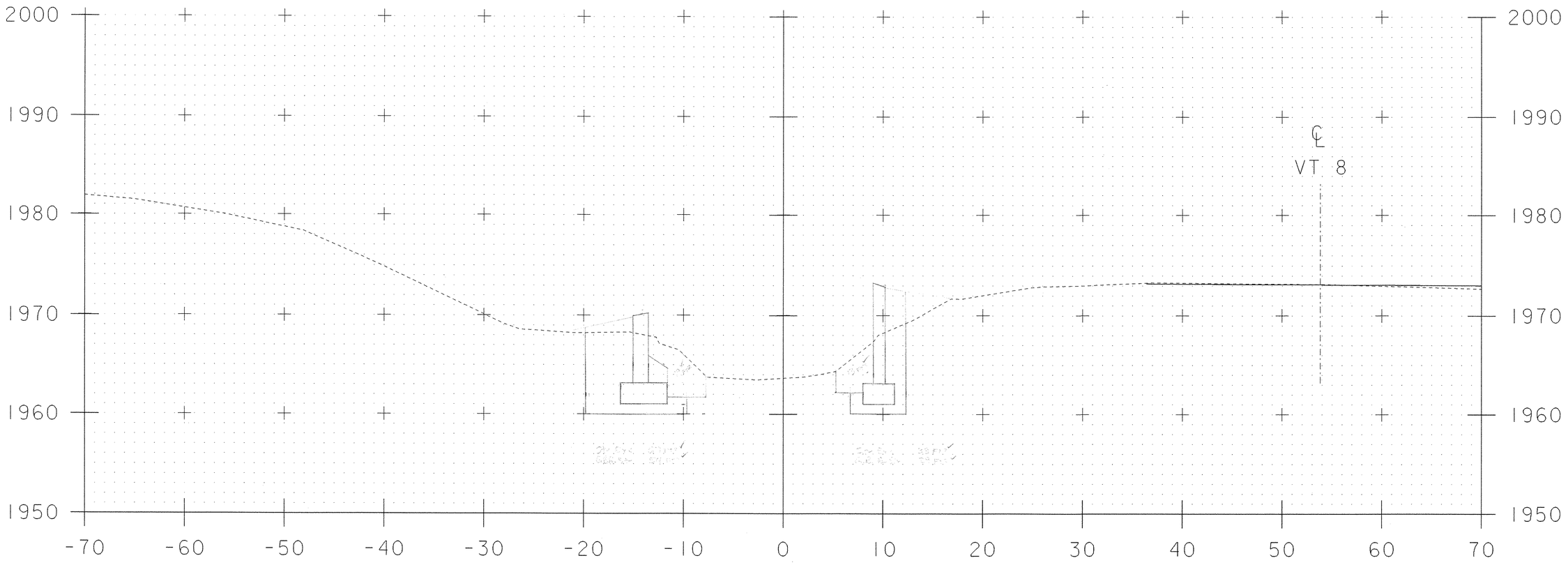

11+56

Sheet #18 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res19.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+56.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
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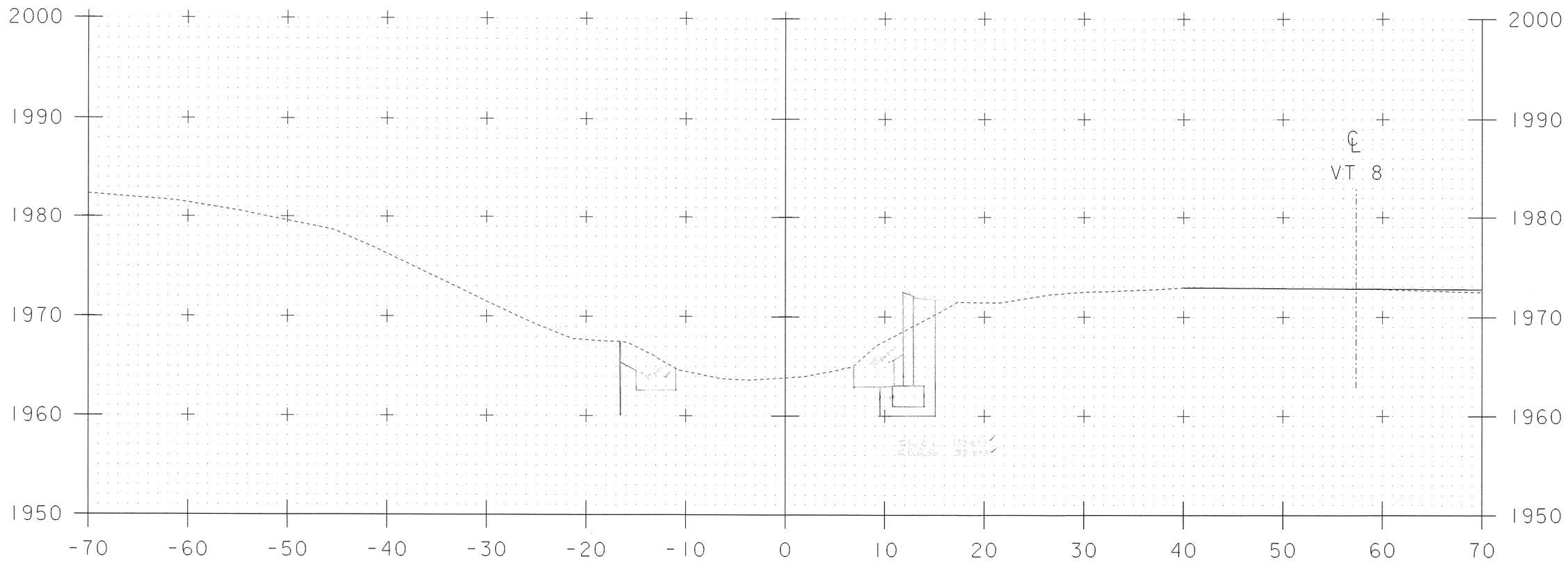

11+60

Sheet #19 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res20.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+60.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
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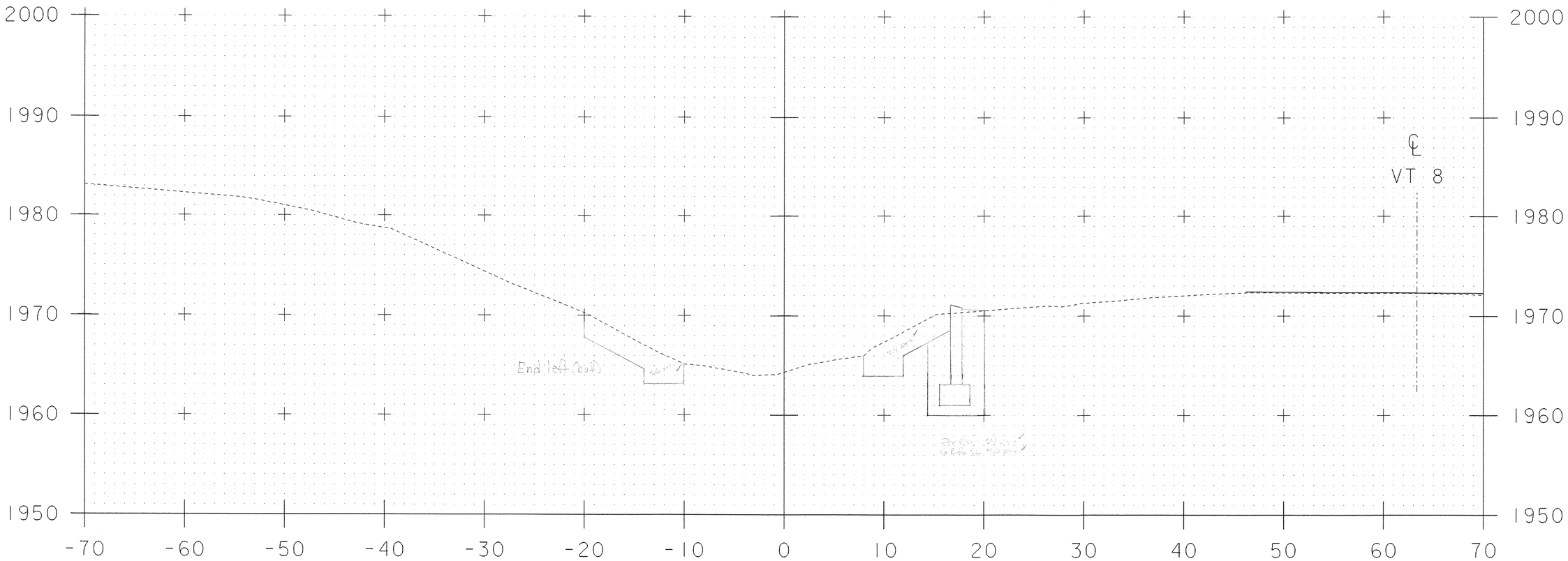
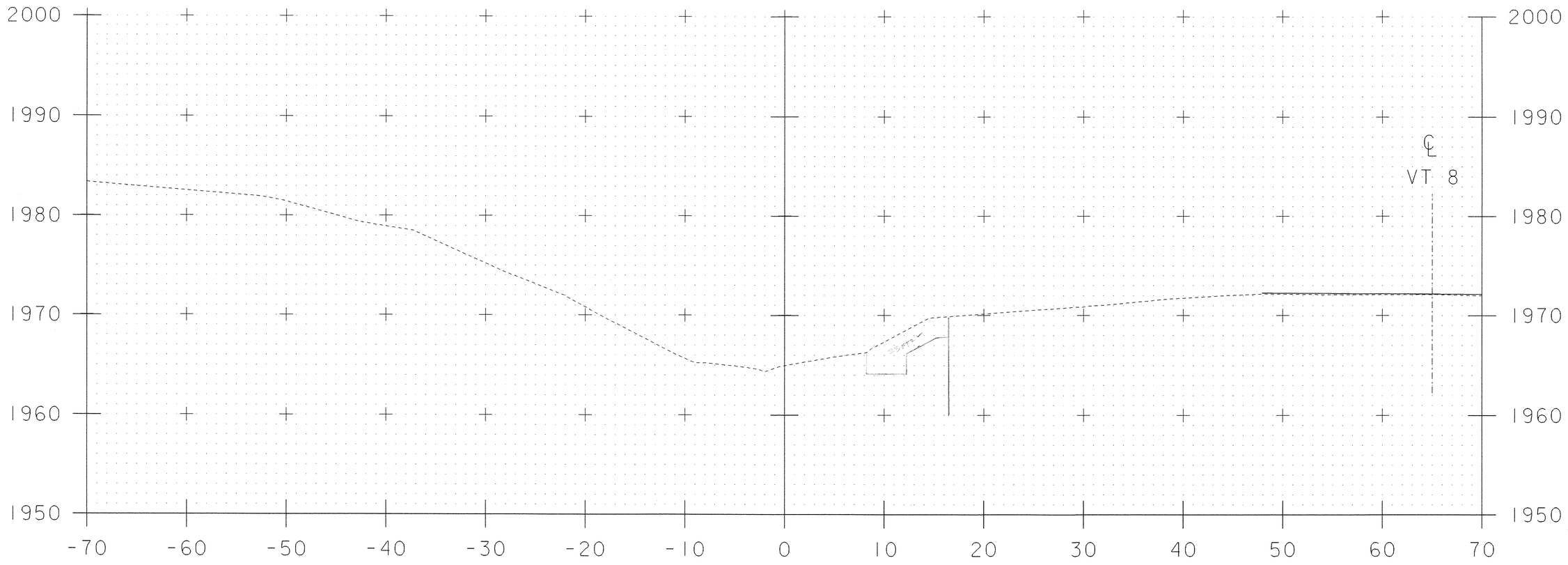


11+67

Sheet #20 of 22

PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res21.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+67.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
5 0 5



11+69

Sheet #21 of 22

SCALE 1" = 5'-0
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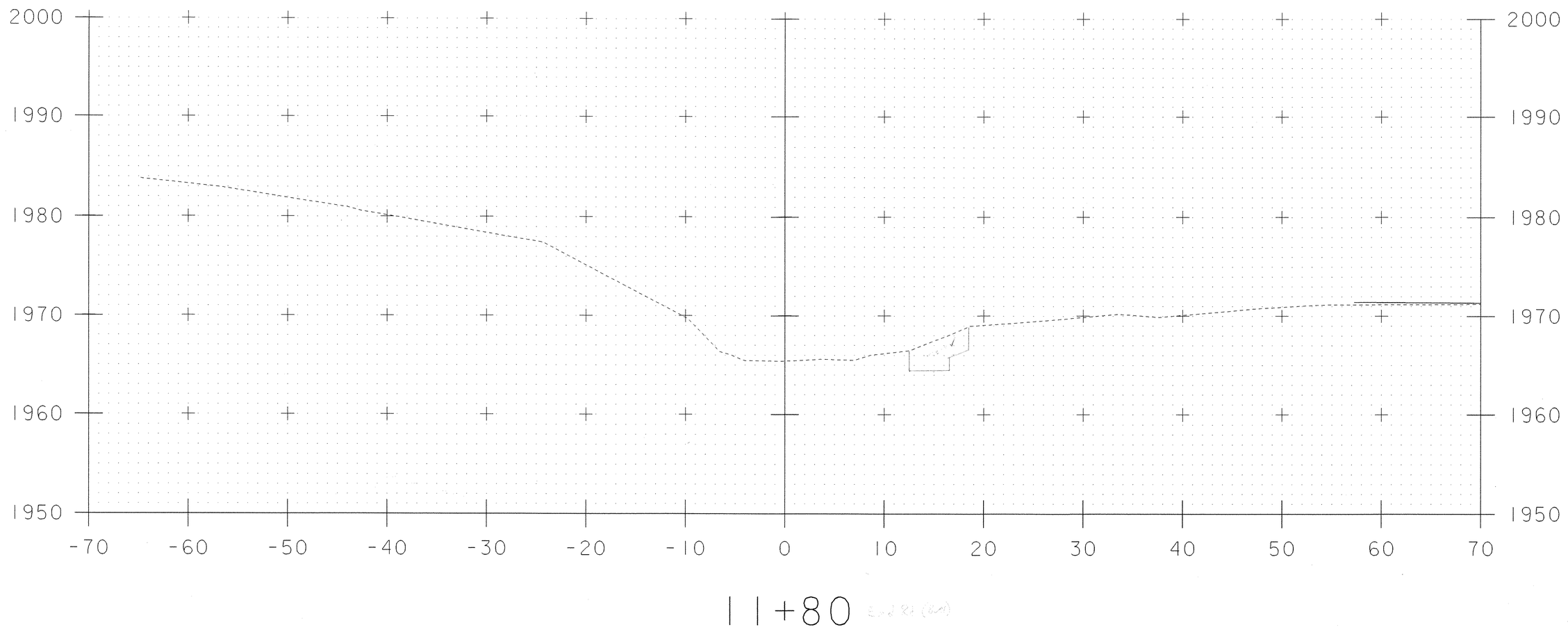
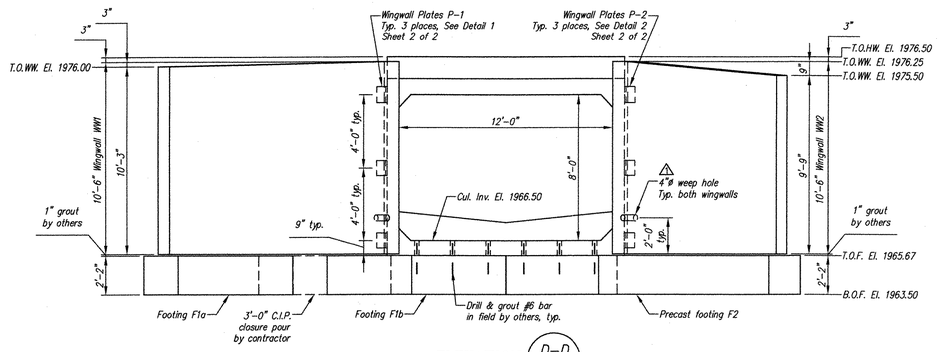
PROJECT: READSBORO	PROJECT NO.: ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res22.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+69.00	SHEET: 27 OF 39



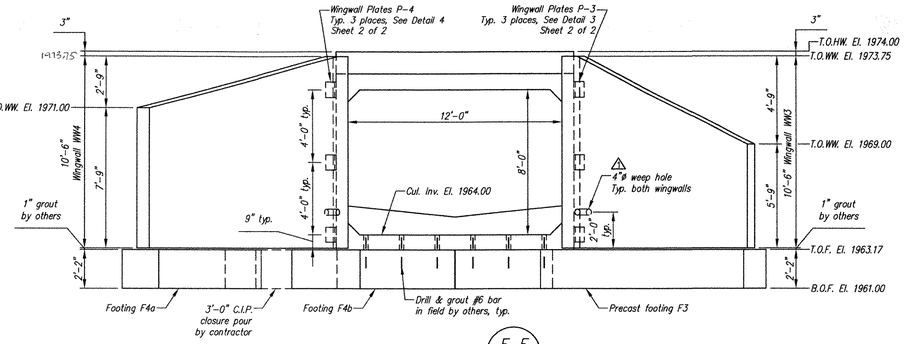
Sheet # 22 of 27

PROJECT:	PROJECT NO.:
READSBORO	ST CULV (4)
DESIGN FILE NAME: 04c176/structures/s04c176resident.dgn	
IPARM FILE NAME: s04c176res23.i	PLOT DATE: 19-APR-2007
DESIGNED BY: E.L.RUSTAY	DRAWN BY: E.L.RUSTAY
SQUAD LEADER: C.P.WILLIAMS	CHECKED BY:
RE CHAN STA. 11+80.00	SHEET: 27 OF 39

SCALE 1" = 5'-0
5 0 5



ELEVATION D–D 1of2



ELEVATION E–E 1of2

WINGWALL NOTES

GENERAL NOTES:

1. The wingwalls have been designed for general site conditions. The project engineer shall be responsible for the structure's suitability to the existing site conditions, and for the hydraulic evaluation — including scour and confirmation of soil conditions.

2. Prior to construction, contractor must verify all elevations shown through the engineer.

DESIGN DATA

Design Method: Load factor per AASHTO Specification
Assumed Allowable Soil Bearing: 3000 PSF (Verify)
Wingwalls designed for Earth Pressure + Live Load Surcharge

MATERIALS

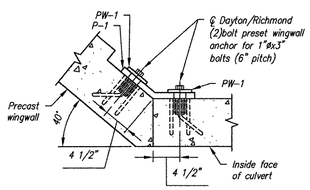
–Precast units shall be constructed and installed in accordance with CON/SPAN Specifications.
–Concrete for Footings and Wingwalls shall have a minimum compressive strength of 4000 psi.
–Reinforcing steel for Footings and Wingwalls shall conform to ASTM A615, A616 or A617–Grade 60.

WINGWALL PIECE SCHEDULE (MX-FA5000SM)

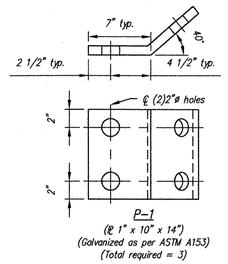
MARK	QTY	LENGTH	YDS	WEIGHT	
WW1	1	20.00 '	8.16	16.52	TONS
WW2	1	13.00 '	4.95	10.02	TONS
WW3	1	12.00 '	3.89	7.88	TONS
WW4	1	19.50 '	7.25	14.68	TONS
F1a	1	10.00 '	2.01	4.06	TONS
F1b	1	13.81 '	2.77	5.61	TONS
F2	1	19.76 '	3.96	8.03	TONS
F3	1	18.62 '	3.74	7.56	TONS
F4a	1	13.35 '	2.68	5.42	TONS
F4b	1	10.00 '	2.01	4.06	TONS

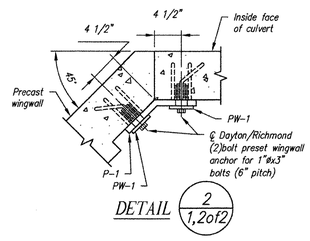
Footings to be 4,000 psi (MX-FA4000SM)

ADD TABLE



DETAIL 1 1,2of2





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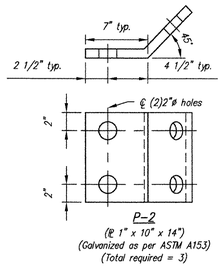

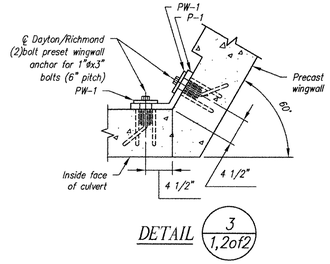

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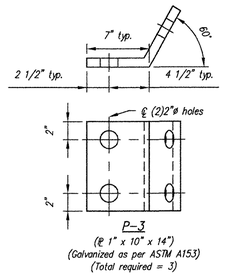
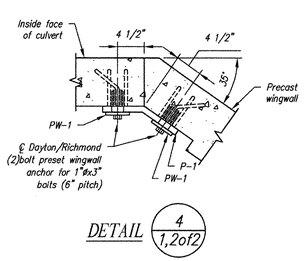
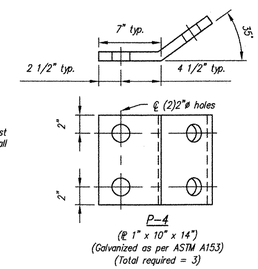
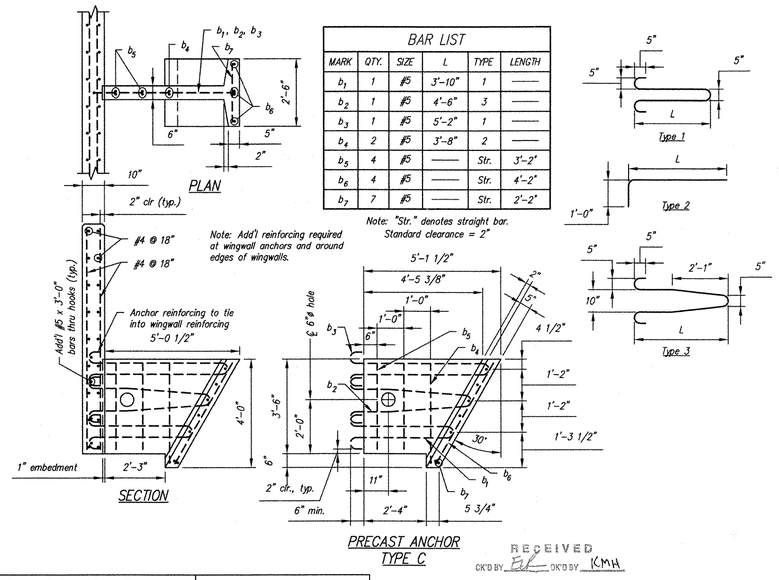


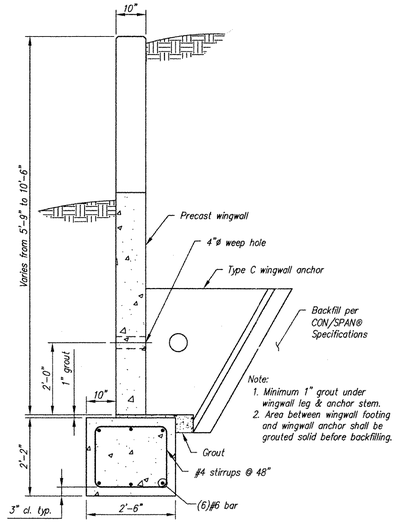


DETAIL 4 1,2of2

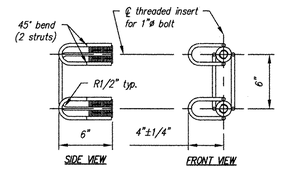




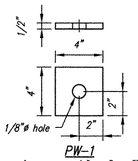
PRECAST ANCHOR TYPE C



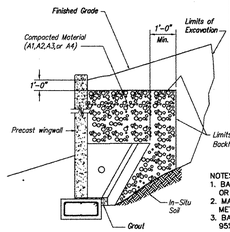
TYPICAL WINGWALL SECTION



DAYTON/RICHMOND TWO BOLT PRESET ANCHOR



PW–1
(℄ washer, 1/2" x 4" x 4")
(Galvanized as per ASTM A153)
(Total required = 48)



BACKFILL DESCRIPTION								
Group Classification	A–1		A–3	A–2				A–4
	A–1–a	A–1–b		A–2–4	A–2–5	A–2–6	A–2–7	
Sieve Analysis, Percent Passing								
No. 10	50 max.							
No. 40	30 max.	50 max.	51 min.					
No. 200	15 max.	25 max.	10 max.	35 max.	35 max.	35 max.	35 max.	36 min.
Characteristics of Fraction Passing No. 40								
Liquid Limit				40 max.	41 min.	40 max.	41 min.	40 max.
Plasticity Index	6 max.		N.P.	10 max.	10 max.	11 min.	11 min.	10 max.
Usual Types of Significant Constituent Materials	Stone Fragments, Gravel & Sand		Fine Sand	Silty or Clayey Gravel and Sand				Silty Soils
General Rating as Subgrade	Excellent to Good							Fair to Poor

NOTES
1. BACKFILLING OPERATIONS WITHIN THE C.B.Z. SHALL BE PERFORMED IN LIFTS OF 8" OR LESS (LOOSE DEPTH).
2. MAXIMUM DRY DENSITY SHALL BE DETERMINED BY AASHTO T–99 OR OTHER APPROVED METHODS.
3. BACKFILL SHALL BE COMPACTED IN LAYERS UNTIL THE DENSITY IS NOT LESS THAN 95% OF THE MAXIMUM DRY DENSITY.

WINGWALL BACKFILL REQUIREMENTS

William D Lockwood
11-30-06

RECEIVED
CK'D BY EL OK'D BY KMH
DEC 05 2006
RESUBMIT ____ APPROVED AS NOTED
BY GPW DATE 12/12/06

Contractor is to verify that all information shown on drawings has been thoroughly checked, complies with the contract documents and is adequate to meet the field conditions. Some dimensions and details may differ slightly from contract drawings to accommodate the manufacturing or design process. Approval of this drawing indicates that any deviation from the contract documents has been reviewed and found to be acceptable. Production will not commence until receipt of signed, approved shop drawings.

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Stamp for wingwall & footing design only
CONSPAN® BRIDGE SYSTEMS
3100 Research Blvd.© 1991
Dayton, Ohio 45420–0266
Phone: (800) 526–3999
Fax: (937) 254–8365

Rev.	Date	DESCRIPTION	By
5			
4			
3			
2			
1	11/21/06	Called out 4"ø weep holes in Elevation D–D & E–E; WW1 revised to be 20' in piece schedule	MS

REVISIONS

This drawing is based upon information provided from the following documents and/or sources:
Engineer: VAOT
Project No: ST CULV (4)
Drawings: PROPOSED IMPROVEMENT BRIDGE PROJECT – VT RTE 8, RURAL MAJOR COLLECTOR
Sheets 1 through 39 of 39 sheets
Specifications: Readsboro AC STP ST CULV (4) – Special Provisions
Supplemental Specifications – Schedule of Prices
Other Sources:

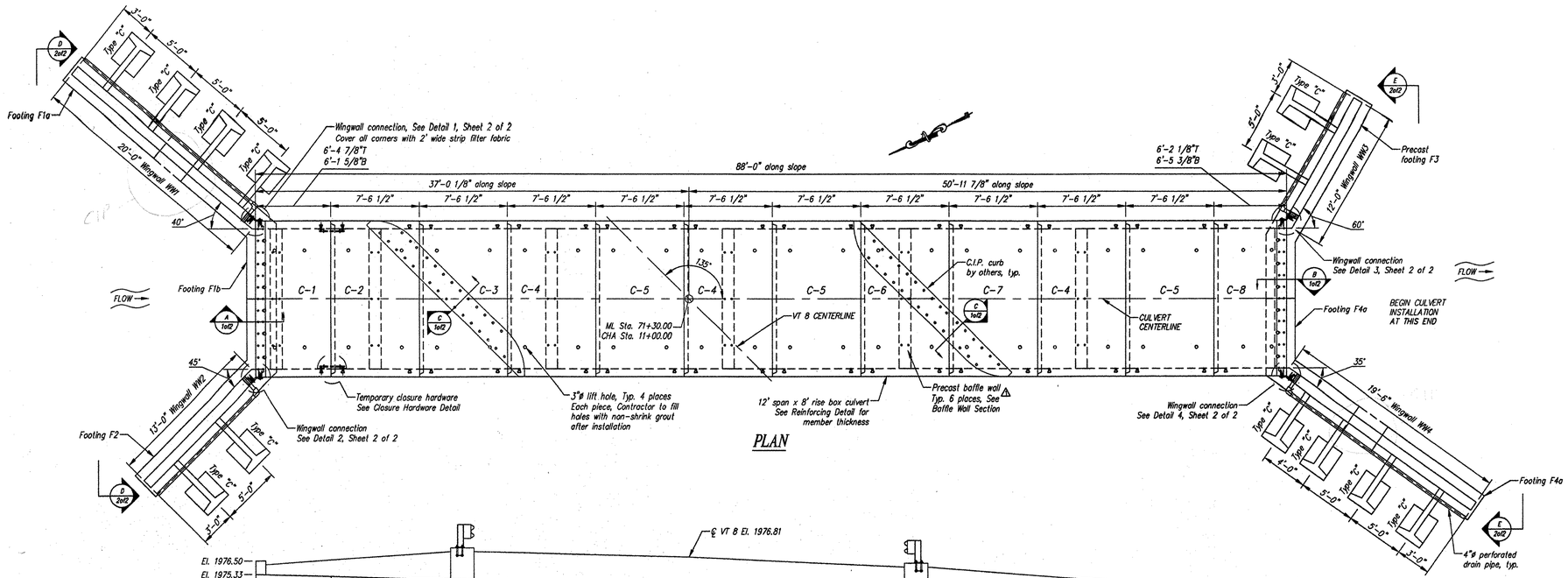
Concrete Systems Inc.
9 Commercial St., Hudson, NH,03051
Phone 603-889-4163
Fax 603-889-2417

STATE AGENCY VAOT

Drawn By	M SCOTT	Date 10/02/2006
Checked By	TK/KJG	Date 10/03/2006
Approved By		Date

PIKE INDUSTRIES
VT RTE 8, RURAL MAJOR COLLECTOR
READSBORO, VT

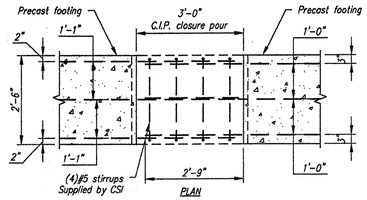
D | BOX CULVERT WINGWALL DETAILS – BRIDGE NO. 02 | REV 1
Drawing No. C18331–LO1–3
Quantity: 1 | Project No: AC STP ST CULV (4) | SHEET 3 OF 3

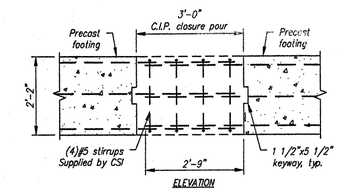


BOX CULVERT GENERAL NOTES:

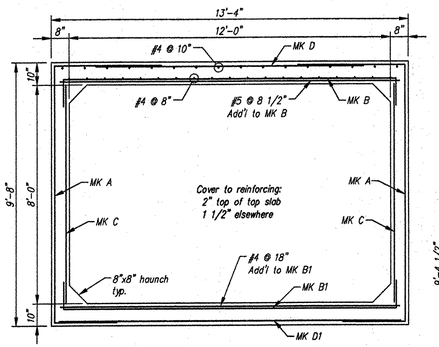
1. Structure designed and built in accordance with AASHTO "Standard Specifications for Highway Bridges" and ASTM C1433.
2. Design Parameters:
   - Live load: AASHTO HS25-44
   - Earth Cover: 1.5' to 3'
   - Concrete: Design strength f'c = 5000 psi; Unit weight = 150 pcf
   - Reinforcing: ASTM A615 (rebar), grade 60; ASTM A185 (WWF) fy = 65 ksi
   - Soil: Unit weight = 140 pcf; Minimum lateral pressure coefficient .25; Maximum lateral pressure coefficient .50
   - Cover to reinforcing: 2" top of top slab; 1 1/2" elsewhere u.n.o.
3. Dimensions include a joint gap. Actual culvert piece length is ½" shorter (i.e. C-2 = 7'-6").
4. No dampproofing supplied by CSI.
5. DBS are Dowel Bar Splicers and DI are Dowel Ins. DI's for C.I.P. curb to be installed and cut/bent in field as required.
6. Precast headwalls not designed for impact load.

CULVERT PIECE SCHEDULE (MX-FA5000SM)					
MARK	QTY	LENGTH	YDS	WEIGHT	
C-1	1	6.27 '	9.06	18.34	TONS
C-2	1	7.50 '	9.94	20.13	TONS
C-3	1	7.50 '	9.38	19.00	TONS
C-4	3	7.50 '	9.94	20.13	TONS
C-5	3	7.50 '	9.38	19.00	TONS
C-6	1	7.50 '	9.94	20.13	TONS
C-7	1	7.50 '	9.38	19.00	TONS
C-8	1	6.27 '	8.15	16.50	TONS

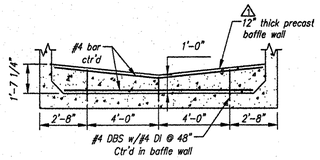




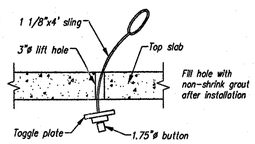
C.I.P. CLOSURE POUR DETAIL



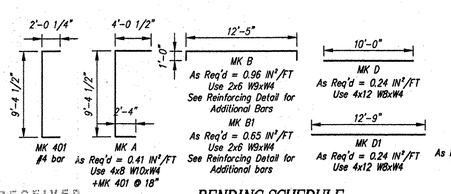
CULVERT REINFORCING DETAIL



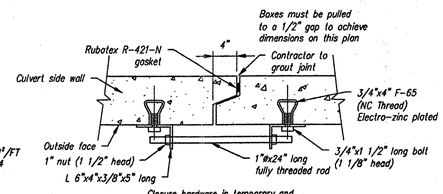
BAFFLE WALL SECTION



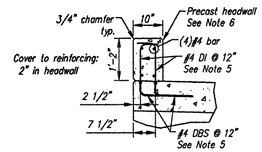
CULVERT LIFTING DETAIL

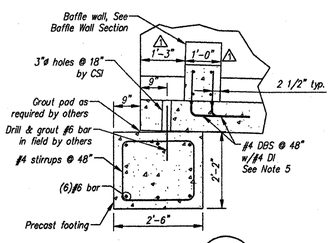


BENDING SCHEDULE

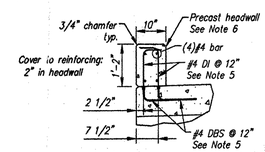


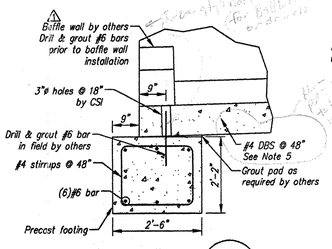
CLOSURE HARDWARE DETAIL



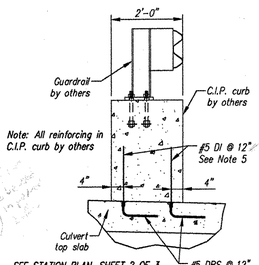


SECTION A 1of2





SECTION B 1of2



SECTION C 1of2

RECEIVED
CK'D BY ____ OK'D BY KMH
DEC 05 2006
RESUBMIT____ APPROVED____
BY GPW DATE 12/12/06

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STATE OF VERMONT RAY S. COWAN No. 6263 PROFESSIONAL ENGINEER

Stamp for box culvert only

SFC Engineering Partnership Inc.
25 SUNDIAL AVENUE, SUITE 205W
MANCHESTER, NH 03103-7230
TEL. 603-647-8700
FAX. 603-647-8711
www.sfcnp.com

Rev.	Date	DESCRIPTION	By
5			
4			
3			
2			
1	11/21/06	Revised baffle walls to be 12" thick; Changed baffle at outlet to be by others	MS/TK

REVISIONS

This drawing is based upon information provided from the following documents and/or sources:

Engineer: VAOT
Project No: ST CULV (4)
Drawings: PROPOSED IMPROVEMENT BRIDGE PROJECT – VT RTE 8, RURAL MAJOR COLLECTOR Sheets 1 through 39 of 39 sheets
Specifications: Readsboro AC STP ST CULV (4) – Special Provisions; Supplemental Specifications – Schedule of Prices
Other Sources:

Concrete Systems Inc.
9 Commercial St., Hudson, NH 03051
Phone 603-889-4163
Fax 603-889-2417

STATE AGENCY
VAOT

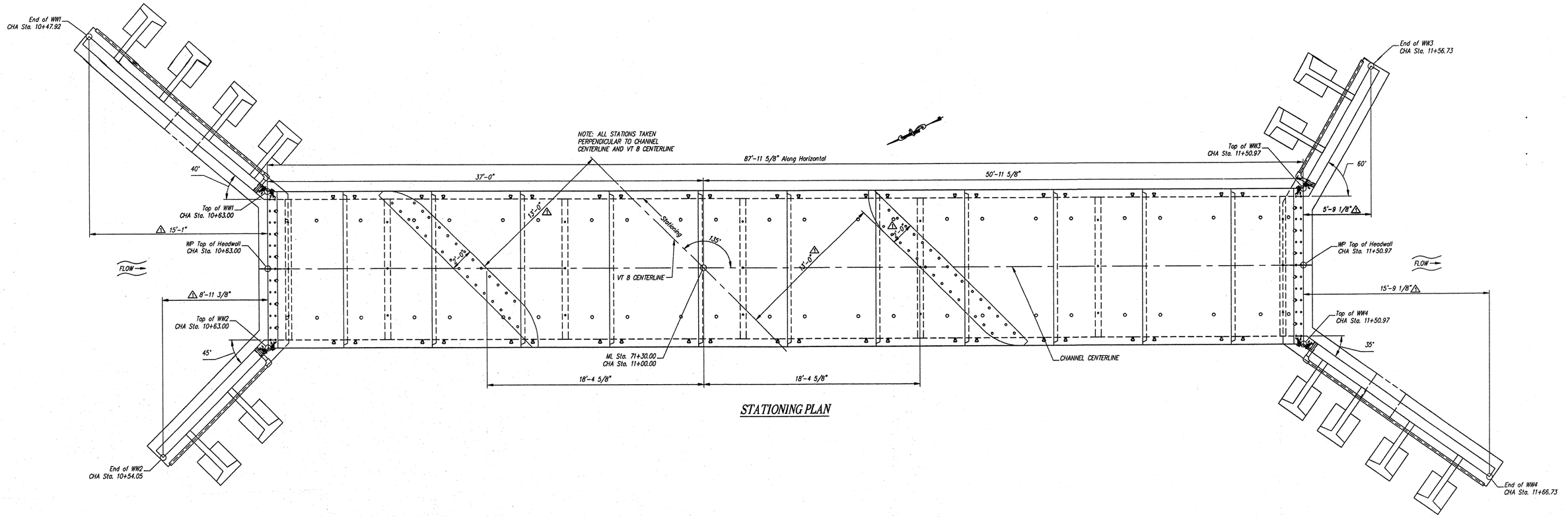
Drawn By	M SCOTT	Date	09/29/2006
Checked By	TK/TR	Date	10/03/2006
Approved By		Date	

PIKE INDUSTRIES
VT RTE 8, RURAL MAJOR COLLECTOR
READSBORO, VT

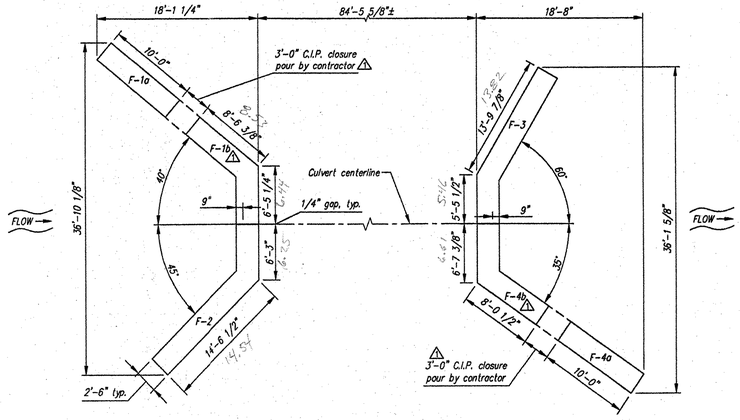
D — BOX CULVERT LAYOUT AND DETAILS – BRIDGE NO. 02 — REV 1

Drawing No. C18331-L01-1

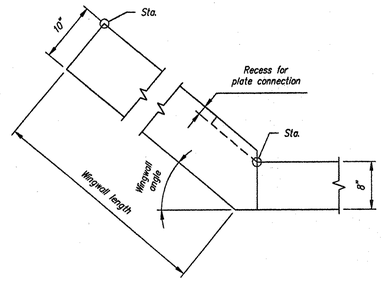
Quantity: 1 | Project No: AC STP ST CULV (4) | SHEET 1 OF 3



STATIONING PLAN



⚠ FOOTING PLAN



STATIONING LOCATION DETAIL

RECEIVED
OK'D BY EJ OK'D BY YmH
DEC 05 2006
RESUBMIT APPROVED ✓
BY OPW DATE 12/12/06

Contractor is to verify that all information shown on drawings has been thoroughly checked, complies with the contract documents and is adequate to meet the field conditions. Some dimensions and details may differ slightly from contract drawings to accommodate the manufacturing or design process. Approval of this drawing indicates that any deviation from the contract documents has been reviewed and found to be acceptable. Production will not commence until receipt of signed, approved shop drawings.

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STATE OF VERMONT
RAY S. COWAN No. 6068
PROFESSIONAL ENGINEER
Ray S Cowan, PE
Stamp for box culvert only

SFC ENGINEERING PARTNERSHIP Inc.
25 SUNDIAL AVENUE, SUITE 205W
MANCHESTER, NH 03103-7230
TEL. 603-647-5700
FAX. 603-647-8711
www.sfceng.com

Rev.	Date	DESCRIPTION	By
5			
4			
3			
2			
1	11/21/06	Added dimensions to wingwall stations and C.I.P. curb; Revised Footing Plan	MS

REVISIONS

This drawing is based upon information provided from the following documents and/or sources:
Engineer: VAOT
Project No: ST CULV (4)
Drawings: PROPOSED IMPROVEMENT BRIDGE PROJECT – VT RTE 8, RURAL MAJOR COLLECTOR
Sheets 1 through 39 of 39 sheets
Specifications: Readsboro AC STP ST CULV (4) – Special Provisions
Supplemental Specifications – Schedule of Prices
Other Sources:

CSI Concrete Systems Inc.
9 Commercial St., Hudson, NH.03051
Phone 603-889-4163
Fax 603-889-2417

STATE AGENCY
VAOT

Drawn By	M SCOTT	Date 10/02/2006
Checked By	TK/TR	Date 10/03/2006
Approved By		Date

PIKE INDUSTRIES
VT RTE 8, RURAL MAJOR COLLECTOR
READSBORO, VT

D | Drawing No. C18331-L01-2 | REV 1

Quantity: 1 | Project No: AC STP ST CULV (4) | SHEET 2 OF 3